The Builder.

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Selected Design, Municipal Buildings, Walton-on-Thames ..... Messrs. Macintosh & Newman, Architects.
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Students' Designs at the Institute of Architects.

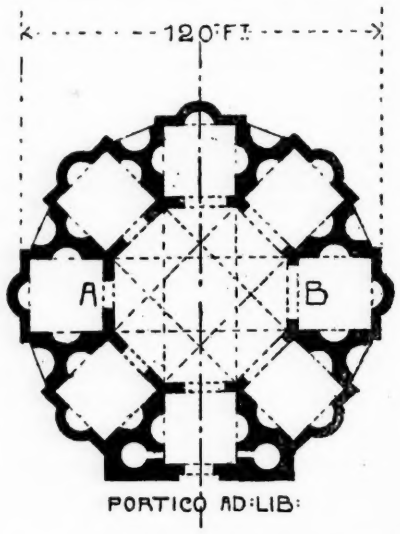
WE are glad to see that the competitions for the prizes offered by the Institute of Architects for designs by students are beginning to revive, and that this year the competition for the Soane Medallion reminds the elder among us of some of the Soane competitions of old days, which used to produce drawings and designs far superior to those which we have been in the habit of seeing during the last eight or ten years. The prizes which depend mainly upon drawing have indeed always kept their place; the work done for the Pugin and Owen Jones Scholarships and for the Measured Drawings Medal has never materially fallen off; it is in the two prizes which are given for design, the Soane and the Tite, that there has been such a feeble appearance lately, both in regard to the number and the quality of the designs; in fact, there has been more than one year recently in which, in our opinion, the Soane Medallion ought to have been withheld altogether, as a hint to students that something better was expected of them if they would win the leading prize the Institute has to bestow. This year we have, however, sixteen competitors for the Soane and twenty-four for the Tite, and these include a great deal of very good work, and two or three at least which may be called remarkable designs.

The revival of interest and energy over these two competitions may perhaps in great measure be attributed to the fact that the subjects are more interesting from a purely [architectural point of view than usual, and that] they are such as leave the designers] free to consider architectural effect as the principal object. It is nearly always in plan that the Soane competitors have been most deficient; and in the subject for this year, a swimming-bath for a seaside town, to be treated (the interior of the bath especially) in a monumental architectural manner, and in which the "engineering" connected with a swimming-bath was allowed to be ignored, the competitors had a subject of the greatest architectural suggestiveness, while at the same time presenting no great difficulties in planning; and in the case of the Tite prize the plan was furnished to them. A concert-hall, which is a subject that has been twice given for the Soane, and produced very poor results, ought to have been an inspiring one, but the subject is a good deal complicated with difficulties in regard to planning, seating, and acoustics, which seem to have rather deterred competitors. Of course it is not quite right that practical difficulties should be evaded in competitions of this kind, part of the value of which consists in preparing architectural students for the practical problems which they will have to solve in actual practice; but it is exceedingly natural that young architects, to whom architecture still presents the dream of great opportunities of poetic effect, and whose enthusiasm for the art is in full blossom, should feel more drawn towards subjects in which they can develop the full capacity of architecture for effect on a grand scale; and we are not without sympathy with them in this respect.

There could hardly be a finer opportunity for an architect than to be invited to design a great swimming-bath as an architecturally treated hall, regardless of cost, and with the added beauty of the water surface and its effects of reflection. The particular point of the instruction that it was to be "in a seaside town" we do not quite perceive, nor, as far as we noticed, have any of the competitors endeavoured to give special point to this requirement in the character of their designs; it may have been intended as an intimation that it was a locality in which a spacious and open site would be more likely to be found than in an inland town, and that a seaside town would be more or less a pleasure resort, and would therefore give excuse for treating the building in a more than usually decorative and festive manner. Of the designs submitted there can hardly be a question that "Iona" is the finest; it has the advantage of being set off by splendid draughtsmanship, but even putting this aside it is before all the others in general conception, and is a design which would do honour to any architect. For one thing, the author's plan is a distinct and original conception. On the ground floor the two long sides of the design assume the form of two great sweeping curves, which form a loggia on each side for walking; the straight walls of the main swimming-bath forming the chord of the arc. This is really an architectural idea worth note; it is something quite out of the ordinary run of planning: there is a touch of genius in it. The centre part of the space between the curved loggias and the swimming-bath is occupied on one side by the separate private baths, on the other side by a Turkish bath, the remainder of the space being open courts. The entrance-hall and other apartments at one end, and the gymnasium at the other end, form cross blocks at each end of the swimming-bath block, the curved loggias coming into the re-entering angles. The straight side walls of the swimming-bath rise above the lower buildings, and are treated very effectively with large semicircular windows with an order of columns which stand free in front of the two vertical divisions of the windows. It is an unusual treatment to place columns in front of a window of this kind, but we do not see any objection to it, and it has the effect of carrying on the architectural composition across the wide spaces of the windows, and giving the apparent support required to the entablature. Exterior perspectives were not asked for, the interior perspective of the bath presenting quite enough work in itself; it might be a question how the grouping would look in perspective, with the lower curved building in front and the straight wall rising behind it; but at all events the main arrangement of the plan would be completely indicated in the grouping of the building. The small dome over the entrance hall is a very good bit of design. The interior perspective is a very fine drawing showing a circular barrel vault rising from

an arcade carried on massive square piers, the coffered arches being shown right back to the external walls, and the side galleries carried in colonnades between the piers; the arches spring from an entablature carried from the large piers to the outer wall, leaving square-heading openings between pier and wall. The piers and vault are richly decorated with sculpture boldly sketched in, the centre portion of the vault being left in panels of plain surface, with the object, no doubt, of getting a white reflecting surface over the centre of the bath. This is so necessary for securing a bright and attractive effect in the water, that it has been rather generally assumed that top-lighting is almost a *sine quâ non* in a swimming-bath, to lighten up the water; and practically this is true, but it must be admitted that in an architectural sense this advantage is secured at the cost of destroying the monumental effect of the roof, and as this was to be a piece of monumental architecture we are inclined to think, as both "Iona" and some other competitors have evidently thought, that side-lighting best meets the architectural conditions. The dressing-boxes are ranged along the outer walls behind the colonnaded screen, and are thus prevented from interfering with the architectural effect, while they are sufficiently close to the water. This is an important point; some of the competitors have hidden the dressing-boxes away too far from the bath; they should be as close to the water as they can be without interfering with gangway room round it, otherwise the bather gets a chill before getting to the water, and the space between the bath and the boxes leaves a great amount of wet floor from the drippings from bathers coming out. Some of the competitors appear to have thought it a good plan to have entrances to the boxes both back and front—a back corridor for coming in dressed and a front door for issue to the bath when undressed; but this is a mistake; dressing-boxes are necessarily small, and to have a door both in front and back is inconvenient, besides promoting draughts. We do not see why "Iona" provided a small "sea-water bath" in his gymnasium block; in a seaside town it stands to reason that the main bath would be supplied with sea-water; we only wish we could get it into our London swimming-baths.

The two next best designs are perhaps "Balneæ" and "Tepidarium." Both of them show somewhat the same general idea as "Iona" in the treatment of the swimming-bath hall—a great side arcade on massive piers, with a semicircular vault. The general effect of the interior of "Balneæ" is very good, though it does not derive much advantage from the drawing, which seems to have been done in a hurry, and the Classic columns which are used (not very happily) in the manner of angle columns to the main piers are disagreeably attenuated in proportion, and have no diminution; they look like Classic columns used in a Gothic manner. The geometrical drawings are however very good and carefully treated, and the building would be a fine one as a whole. It is rather a pity that the author has planned his fine octagonal entrance-hall so as to cut into one side of the bath hall; the junction is cleverly managed, and as the competitors were not limited in regard to space we presume that he considered this as a point in his design, but it must spoil the effect of the bath hall to some extent. The arrangement of the dressing-boxes behind a row of rather wide masonry piers has the effect of subordinating them to the architecture, but it necessitates some of their doors being rather inconveniently narrow. "Tepidarium" shows a somewhat similar idea in the treatment of the hall, but there is a separate column in front of the main piers, and the side arches are not carried back to the outer wall, the gallery having a flat ceiling behind the arcade—not so bold and effective a treatment. The dressing-boxes are



Plan given for the Tite Prize Competition.

better arranged for access than in "Balneæ." The perfectly plain vault, with its "Welsh" groins at the side, looks rather crude in the perspective view, but as a whole this is a very meritorious design.

Among the other designs "Silhouette" shows a fine coloured perspective of the bath hall, somewhat reminiscent of St. Mark's in general effect; it is not very apparent what is intended to be the material of the warm-tinted walls. In the plan the dressing-boxes are badly arranged, facing each other on each side of a narrow corridor; on days of full attendance there would be inconvenient crowding here, and the boxes are not in sufficiently close connexion with the bath. The exterior elevations are good in the main; the chimney is well treated; the transition from the square to the circular plan in the dome is rather crudely managed. In "Io," in many respects a clever design, the bath interior is treated in a dignified and effective manner, with side lighting and a rather heavy segmental-arched ceiling; the plan shows the same mistake as in "Silhouette," of crowding the dressing-boxes on each side of an internal corridor, instead of facing them all towards the bath. "Zeno" shows a very clever design in which brick and coloured faïence are largely used, and the dressing-boxes are divided by columns picturesquely treated; there is a tie-beam roof with a continuous lantern-light down the centre. There is a good deal of ability in this design, but it is hardly what we should call monumental architecture. This is one in which the dressing-boxes are shown between two corridors and with front and back doors, which, as already observed, we regard as a mistake. "Amphibious" is also a ceramic design with much cleverness but somewhat eccentric, and it seems a mistake to put square piers above the gallery carried by coupled columns below, inverting the usual structural order of things; nevertheless, there is a great deal of ability shown in the details. "Faust" is a design which fails by being too clever; the interior architecture of the bath hall is all cut up into bits; a good deal of clever detail, but the whole wants breadth and does not hang together.

The Tite prize is less important than the Soane in so far as it is a study in style only, apart from practical requirements, but we may feel a special satisfaction in seeing that it has been so largely and ably competed for, as there is no harm in saying, now, that the subject was the suggestion of the editor of this journal, who is very glad to find that it has proved so attractive. The problem was to give a treatment, in Italian architecture, of the subjoined plan, which is drawn out from a sketch plan of Leonardo da Vinci's to be found among his miscellaneous architectural sketches and ideas published in a book by Baron de Geymüller. The plan has been familiar to us for many years, and we have long thought it was worth doing something with. Leonardo gives a very rough sketch of his notion of its architectural treatment, which is not worth much, but the plan itself is an original conception, and a very suggestive one. The designs show a very high average of merit, and the award of the prize will, we should think, be a matter of some difficulty. Our own very decided opinion is in favour of that signed "In Memoriam," which, not without weak points, shows more unity of conception and more of architectural genius than any other. The design is treated in a severe and restrained manner; the weak points in it are the curved out buttresses at the base of the coupled columns in the upper story, which want a little more "treatment" to carry them off—they look rather as if the author did not quite know what to put there: and it is a question whether the upper order should not have been on a smaller scale than the portico order; as it is, the upper story seems rather to crush the lower. There is a grandeur, nevertheless, about the whole thing, and the perspective drawing shows a great deal of artistic power. It should be mentioned that the instructions were that the building should be treated as a "Royal Memorial Chapel," an idea which the nature of the plan seemed rather to suggest. Among the other designs there are very few that are not interesting and meritorious more or less; several that are of remarkable excellence. Among these we may mention "Nimrod," a very refined design shown in admirable drawings and with a great deal of very pretty decorative detail, but rather wanting in the solemnity of character proper to a memorial chapel; "Marble," a very good design in Early North Italian Renaissance, with flat surfaces and a good deal of marble inlay; the drawings of this are also admirable. But this is not what Tite intended; his prize was to encourage "The Study of Italian Architecture," and what he meant was Classic Renaissance, and to that phase of architecture, as we have before said, competitors are bound to keep. Not that there should be no original detail, but that the treatment and the effect should be such as are founded on and in harmony with the Classic Renaissance—carrying it further, if you will, but not going back, as "Marble" does, to a

phase of Italian architecture earlier than that, and essentially different from it. Among other good designs are "Gibbs;" "R. I. P.;" the one marked by a sprig of foliage—the author has rather overdone rustication, but there is a certain power about it; one marked by three red spots, graceful but not very original; "Tendimus," who shows his building finely placed on a terraced platform; "Bramante da Urbino," who is to be credited for the bold and original treatment of the buttresses to the drum of the dome; "Rex," who shows a graceful and severe design, not very striking but very correct; "Pax," in whose design the lower pavilions, with their decorative sculpture, are very effectively and powerfully treated; and "Rex *A*," whose perspective drawing is the best executed in the collection, but the design is very much copied from St. Paul's, and there is no artistic invention about it; only beautiful drawing—which is not the same thing.

Of the six competitors for the Grissell medal the one who signs his drawings with a red fleur-de-lis seems to have best combined a simple and satisfactory treatment of construction with good lighting and a certain eye to architectural effect, a point which must not be lost sight of; for though the medal was instituted for a constructional competition, one must consider that construction the best which, *cæteris paribus*, keeps in mind the requirements of architectural effect and truthfulness in structural expression, without which the competition would become only an engineering one. There are clever points in "Cædmon's" drawings, but they are more those of an engineer than an architect.

The competitions for the prizes in which drawing alone is concerned, excluding original design, must be more briefly noticed. There is unusually large competition for the measured drawings medal and 10*l*. We wish this prize were larger, not because the subject of study needs greater attraction, but as a more suitable recognition of the good work that is done. Such measured drawings as those of Lindisfarne Priory are valuable records of fine Mediæval work, which must, as years pass, grow more and more ruinous, however well conserved. It is a difficult subject—particularly the plan—and it is very well done. "Inca" sends a set of drawings of Houghton Hall, a plain, well-disposed building, designed by Campbell early in the eighteenth century. The subject is rather a dull one for choice, and the interest of sculpture and ornament is rather slurred over. Aston Hall is again represented by "H. T.," and there are two sets of Bolsover Castle, the best being that by "Cavendo Tutus." King Henry's Gate, St. Bartholomew's Hospital, is a good subject well drawn. In all there are twelve sets, and the year is remarkable for there being no Gothic building represented. This is due partly to the prevailing Renaissance phase, and also, we are inclined to think, to the ease with which English Renaissance work can be measured and drawn, compared with English Gothic of the thirteenth and fourteenth centuries.

The Pugin Studentship is given expressly to promote the study of Mediæval architecture, and generally produces excellent studies both in freehand and from measurement, but this year the twelve sets sent in are hardly up to the usual standard. Mr. C. Wontner Smith shows a fine collection of studies, a number of which are not very suitably chosen. We imagine that the drawing of the main western portal of St. Sauveur at Aix, in Provence, was drawn from the cast in South Kensington Museum—at any rate, the stone joints are not shown, and it is therefore useless as a working drawing. His water-colour drawings are good, if somewhat hard, and they seem to be chosen rather more for their picturesqueness than as severe architectural studies in light and shade. Mr. A. Muir has gone in for monochrome brush drawings with success, and his measurement drawings in pencil are well chosen, especially Bishop Bridport's tomb at Salisbury. For direct hasty sketches, those by Mr. J. Harold Gibbons have considerable charm. W. S. A. G. sends drawings in both pencil and ink, the best being the pencil ones. Our advice to students who desire to attain to excellence in draughtsmanship is to study drawing from the round, and to draw direct in pen and ink. The first will teach them the value of light, shade, and shadow; the second will teach proportion and the use of as few lines as possible. The choice of subjects is, of course, most important.

The best single drawing sent in this year for the Owen Jones is that of the Baptistry, Ravenna, by Mr. Edward Bennett. We think the chances of this gentleman winning the prize are somewhat spoiled by his choice of a large coloured enamel, his drawing of which has merit for beautiful colour, but the thing itself is a decadent and worthless piece of art. Mr. James McLachlan also sends a drawing of the Ravenna Baptistry, and a bay of St. Appollinare Nuovo, Ravenna, rather harshly drawn. The remainder of his subjects are very well drawn and well selected, including a beautiful head of St. Catherine of Alexandria, from the church of St. Domenico, Siena. Mr. L. Rome Guthrie has been to Spain, and has made a good drawing of the remarkable wrought iron screen in the Royal Chapel, Granada. He also shows a very true—though slight—perspective study of one of the doorways of St. Mark's, Venice, and a portion of the ceiling from the church of Santa Maria dei Miracoli, Venice, one of the most beautiful cinque-cento churches in Italy. Mr. Percy E. Nobbs has made a careful drawing of the marble wall facing at the west transept of St. Mark's, Venice, and a scheme of mosaic decoration for a church of the form and scale of St. Fosca, at Torcello, showing considerable feeling for colour decoration. Mr. V. T. Cummings and Mr. Ramsay Traquair also show interesting work.

NOTES.

Liverpool Cathedral.

WE are informed that at the last meeting of the Liverpool Corporation Finance Committee it was resolved (one member dissenting) "that so far as that Committee were concerned the preamble of the Liverpool Cathedral Bill be not opposed, and that the Town Clerk, Controller, and Surveyor bring up the heads of agreement as to the transfer of St. James's Mount to the Cathedral Committee." If, however, it is the fact, as we are informed, that three members of the Finance Committee are also members of the Cathedral Committee, one of them being its Hon. Secretary, the significance of this resolution is rather discounted. The matter does not seem to be getting fair or open discussion in Liverpool at all. We have received further complaints as to the action of the leading Liverpool journals, which it appears are ready to print or reprint any letters or remarks favourable to the St. James's Mount site, and refuse to print anything on the other side. It seems to be getting a party or partisan question rather than an architectural one.

The New Admiralty Buildings.

IT is stated that the Departmental authorities have under consideration a further scheme for making an addition to the Admiralty buildings now in progress. At present the foundations are being laid, by Messrs. J. Chessum & Sons, of the block, being the third of the group, which will take the place of the originally proposed gallery or covered way joining the two blocks that have lately been erected upon the Spring Gardens and New-street site, after the plans and designs of Messrs. Leeming & Leeming, architects for the new extensions, and which are already occupied, in part, by the executive staff. Even the sacrifice of the gallery, which would have constituted a pleasing and unwonted feature of the quadrangle as seen from the Horse Guards' Parade-ground, will not, it is apprehended, sufficiently meet the increase of official requirements. There is some probability that at no distant time a site will be cleared for a fourth block of buildings to extend eastwards to Whitehall by the removal of the existing Paymaster-General's Office, which stands between the Horse Guards and the south wing of Ripley's Admiralty at Whitehall. If the whole building were pulled down and a new one erected we should be much better pleased. It might be well worth the expenditure.

Electric Lighting and Settled Estates.

A DECISION of a good deal of practical importance, that of Kinnaird *v.* Treake, is reported in the current number of the official Reports. By the Settled Land Act, 1890, capital may be spent on additions to the estate which are reasonably necessary, and the question arose whether capital sums could be expended on an electric light installation on a number of London houses in South Kensington. It was given in evidence that the houses in question in Cranley-place, Sumner-place, and Onslow-gardens were all unlet, and in order to meet modern requirements it was necessary that they should be fitted with electric light—a noticeable illustration, by the way, of the manner in which electricity is becoming the normal method of illumination in domestic buildings. The application was granted by Mr. Justice Joyce on the ground that the system of lighting fell within the words of the Statute. But he confined his sanction to the wiring of the houses, and would not extend it to fittings such as are usually provided by a tenant. Probably the same point will arise, sooner or later, in regard to country houses, which seem to be on a somewhat different footing. Presently, perhaps, we may have to consider the application of the Settled Land Act to steam heating and efficient ventilation.

The Testing of South London Gas.

THE South Metropolitan Gas Co. seeks power in a bill to be introduced during the present session of Parliament, not only to substitute

the old method of testing for illuminating power during certain limited hours of the evening for the present system of testing at any hour of the day or night by the more satisfactory table photometer, but also to raise the limit of sulphur impurities during the summer months to 22 grains per 100 cubic feet on an average of six days. A clause is also introduced stipulating that the "testing places shall be those at present in use, one for each station for manufacturing gas, and in case of any change in any such station, the substituted testing place shall be on a leading gas main not less than 18 in. in diameter from which the supply of gas is taken, and at a distance not more than two miles from a manufacturing station." These testing clauses ought to be strenuously opposed by the Local Authorities and gas consumers of South London. The stipulation that the illuminating power of the gas may only be tested after 5 p.m. is ridiculous, unless a heating power test is substituted in the daytime for the illuminating power test. We are not, however, surprised to find that no reference is made to the heating value of the gas. We fail also to see any reason for raising the limit of the sulphur impurities. Other gas companies are able to keep the impurities well below the present statutory limits, and the proposed increase would be a retrograde movement. The stipulation that the testing-place shall not be more than two miles from a manufacturing station is also objectionable. The Company has undertaken to supply a certain district with gas, and should supply every street main in that district with gas of good quality. If the gas deteriorates by travelling, the manufacturing stations should be sufficiently numerous and well distributed to give a satisfactory supply to the entire district. Possibly the company may at a future date decrease the number of gasworks, and produce all their gas at one large station. In such case the provision that there shall be one testing-place for each manufacturing station at a distance of not more than two miles might be convenient for the company, but the present arrangement by which the number and location of the testing places is prescribed by officials appointed by the Board of Trade is better for the consumers.

Telephone Charges in London.

AT the conference of representatives of London local authorities last Monday to consider the question of telephone charges and service, a letter was read from Lord Londonderry in which he points out the few small reductions in the charges which the Post Office have effected. He also stated that the agreement between the Post Office and the National Telephone Co. was not subject to ratification by Parliament. The question seems to us to be rather a mysterious one. Modern telephony is very different from the telephony of even six years ago, yet Mr. A. R. Bennett then advised the London County Council to charge a 10*l.* rate, which would include a 10 per cent. Post Office royalty. The present Post Office charges are almost double that proposed by Mr. Bennett, and hence he must either have made a large error in his calculations or the London public must be grossly overcharged. The conference passed a resolution asking the Lord Mayor to bring the question of the agreements between the National Telephone Co. and the Post Office before the House of Commons in the reply to the King's Speech, so that it may be referred to a Select Committee. It seems to us that the prospects of telephony for the coming year are distinctly bright. At Glasgow there are at present 6,000 subscribers to the Corporation telephones, and new subscribers are coming in at the rate of nearly 200 per week. The National Telephone Co. have greatly improved their service in Glasgow by putting their cables in various of the underground railway tunnels, which they can do without asking the permission of the Corporation. We expect that the Company will not venture to cut rates in Glasgow in the way they are doing at Tunbridge Wells, where they are offering an unlimited service for 4*l.* per annum. It is obvious that this district will soon be one of the best telephone areas in the Kingdom. Portsmouth is going to start a municipal service, and Dublin, Manchester, Brighton, and Hull, all of which have prosperous municipal electric lighting stations, are seriously considering the telephone question.

Brixham Breakwater.

THERE is probably no place in England which retains so completely its immemorial character as a fishing port as Brixham. But modern requirements cannot be dispensed with even by an ancient port, and what is greatly needed at Brixham is the efficient completion of the outer breakwater. Brixham is a secure port except in north-easterly gales, and then it is completely exposed to the sea. The old breakwater, built in 1802, forms a small inner harbour. A new breakwater from Berry Head on the south-west of the port was commenced several years ago. It is still, however, uncompleted, and has the appearance of remaining in this state. If elongated to the north, and efficiently completed, it would give the Brixham trawlers complete protection, and render the port a secure anchorage in all weathers. The small old harbour was suitable enough a century ago; now it is obvious that the completion of the new harbour is urgently required. If the Harbour Commissioners are without funds to complete it, the Government should take up the matter again.

St. Olave's and St. Saviour's Grammar School Foundation.

THE Governors of the Foundation have agreed with the sanction of the Board of Charity Commissioners to effect a sale of the St. Saviour's Grammar School premises for 4,000*l.* The school buildings and dwelling house occupy a site of about 8,000 ft. superficial on the north side of Sumner-street, Southwark, adjoining the Church of St. Peter, which had been given by Dr. Charles Sumner, Bishop of Winchester; they were built of brick with stone dressings from Christopher Edmonds's designs, in 1839, after the domestic Elizabethan style, the cost being defrayed by contributions from the parishioners (1,700*l.*) and the trustees of the local Hyndman Bequest. Mr. W. Campbell Jones has prepared plans and designs for the new girls' school of the Foundation to be erected on the north side of New Kent-road, near Buckenham-square. On June 4, 1562, a charter of incorporation was granted to Queen Elizabeth's Free Grammar School of St. Saviour's, Southwark, as first established by Thomas Cure, the Queen's saddler (*ob.* 1588), and William Emerson (*ob.* 1575), with "some other discreet and more sad inhabitants of St. Saviour's" for thirty boys of both poor and rich parishioners. In "Bygone Southwark," 1895, Mrs. Boger mentions that the founders bought in May, 1562, a part of the Green Dragon, formerly Cobham's Inn, a town mansion of Lord Cobham of Sterborough. Those old buildings, standing on the south side of churchyard, were blown up with gunpowder for staying the course of the fire that consumed much of that quarter of the Borough in May, 1676. The later schoolhouse, which in its turn gave place, 1839, for an extension of the Borough Market, is illustrated in Wilkinson's "Londina" and in the *Mirror* of April 18, 1840. A scheme of the Court of Chancery ratified in 1850 recast the statutes of the foundation, of which the advantages are no longer restricted to resident parishoners, and the income of the charity has materially increased during recent years.

The Fine Art Society.

AT the Fine Art Society's Gallery there is on view a collection of drawings by the late Miss Kate Greenaway, which goes to confirm us in the opinion we expressed in regard to a former exhibition, that this artist's range was very limited, and that she failed in the attempt to produce finished pictures. The only one at least of the larger water-colour drawings here which can be considered a success is the "Boy with Basket of Apples" (57), and even this wants the breadth and freedom of style of true water-colour art; it is more like a decorative picture. Miss Greenaway's real success was in her small drawings for what may be called decorative pages; in these she struck a new vein, and they are charming in their grace and delicacy of design and execution. Did Miss Greenaway study Stothard specially? Her work rather suggests it; she has both his good and bad qualities; his peculiar airy grace in treating small figure groupings, and his bad drawing of figures walking, in which Miss Greenaway fails in exactly the same kind of way. In the middle room at the same gallery is a small but charming collection of water-colour landscapes by Mr. Newton Benett, which are well worth a visit. There is a certain sameness of tone about them; all the subjects seem to be treated, so to speak, in the same key; but they are most delicate and beautiful landscape work, and most conscientiously executed. There is not one among them without its attraction, but among the best may be mentioned "Eton;" "Streatley Mill;" "Fairford Mill;" "The Dean's View, Canterbury;" "Greyfriars, Canterbury;" and "Dorchester Abbey." Mr. Benett, it may be observed, treats old buildings, as in the pictures of the Thames-side mills, with great accuracy and character; in this respect his work should be quite satisfactory to architects.

Isle of Wight Victoria Memorial Competition.

A CORRESPONDENT sends us a copy of the conditions for this competition, which are such that we warn architects against competing. The committee require a design for a memorial to cost not more than 1,000*l.* What competitors are to expect may be gathered from the following quotation from the conditions:—

"A premium of 25*l.* is offered for the accepted design; but if in the opinion of the committee

none of the designs submitted are found to be suitable such premium may be withheld. The accepted design will, on payment of the said premium, become the property of the committee, *and no commission is to be paid to the competitor on the design being carried out.*

Every design submitted is to include ground plan, elevation, sections, and other details to enable the same to be carried out, and be drawn to a scale of one inch to the foot."

Even if an ordinary building were in question the architect's commission would amount to 50*l.*; but a work such as this memorial must be could not be reckoned as paid for at a 5 per cent. commission; it is decorative work of a special character. The Committee propose therefore that the successful (?) competitor should present them with the whole design and working details of a work of art, at half the charge which would be due to him for carrying out a villa; and (which in the eyes of many will be a more serious injury) propose to carry it out themselves without his supervision. It is stated that a "duly qualified adjudicator" will be appointed to make the award, "if in the opinion of the Committee it is necessary." No "duly qualified" adjudicator would consent to act on such a competition, and we hope no duly qualified architect will enter into it; he will be very foolish if he does.

THE SURVEYORS' INSTITUTION.

ON Monday evening last a meeting of the Surveyors' Institution was held at No. 12, Great George-street, S.W., Sir John Rolleston, M.P., President, in the chair. The minutes having been read and confirmed, and some donations to the Library and Library Fund announced, a paper on "Rivers' Pollution: Purification of Trade Waters from a Mill-Owner's Point of View," was read by Mr. John H. Hanson. The following are the principal portions of the paper:

The question of the purification of the rivers of the country has occupied the attention of Parliament from time to time since the appointment of a Commission, in 1857, to inquire into the best means of preventing the pollution of rivers. At that time rivers and running waters were used as practically the only available means of carrying away the sewage of towns and populous places, as well as the refuse arising from industrial processes and manufactures. The effect of this had been to seriously prejudice the general health of the public, to silt up the bed of many rivers and streams so as to obstruct the natural flow, to interfere with the navigable portions of the rivers, and to cause the flat low-lying lands to become subject to floods, which left deposits of the solid matters.

The object of this Paper is to deal more particularly with that part of the question which relates to the refuse arising from industrial processes and manufactures, as distinct from domestic sewage, and to consider the effect of the legislation on the subject upon the owners and occupiers of works which are brought within the scope of the various Acts of Parliament passed since the report of the Royal Commission in 1867. My experience on the subject has reference more particularly to the Aire and Calder Basin, or the district which is within the special powers of the West Riding of Yorkshire Rivers Act of 1894, where the industries largely consist of the manufacture of cotton, woollen, and worsted cloths, including the dyeing and finishing processes; and at the outset I should like to say that so far as I have been able to gather the opinion of the manufacturers, they do not object to or wish to put difficulties in the way to prevent the purification of the rivers and streams, but they find difficulties which affect them very materially. At the date of the Commission appointed in 1857 the mills and factories in these districts were almost wholly situate on the sides of the rivers and streams, from which water was taken for water-power and also for the various processes of the trade. The Aire and Calder Basin is supplied with water from mountains of millstone grit, largely covered with moorland to the north and west, and it is from this stratification that much of the pure spring water is derived. The chemical character of this water is peculiarly suitable for the several processes of the manufacture of cotton, woollen, and worsted cloths, and in consequence of this and the proximity of coal the trade has settled in these districts.

Many of the manufacturers had gained rights by prescription, as against the riparian owners down stream, to discharge their trade refuse water, as well as ashes and cinders from the firing of the boilers, into the streams, and millions of gallons of fouled trade waters per day, while hundreds of thousands of tons of ashes and solids per annum were put on to the banks and into the beds of the rivers and carried down by the floods to the lower reaches, there to be dredged out by the navigation so as to keep the channel open. In cases where rights had not been gained by lapse of time, the rivers were so polluted that many riparian owners took little trouble to prevent further pollution. So far as the public authorities were concerned, a manufacturer could discharge his effluents into a river without let or hindrance unless he caused a nuisance injurious to health, or damaged a public fishery, &c. Thus, in practice, a manufacturer had an easy means of disposing of his trade waters.

It will be well, perhaps, at this point to refer briefly to the various Acts of Parliament which have been passed since the Commission of 1857, so far as they relate to manufacturers and trade refuse waters.

The Public Health Act, 1875.—Section 21 provides that "the owner or occupier of any premises within the district of a local authority shall be entitled to cause his drains to empty into the sewers of that authority," subject to his giving notice of his intention so to do, and complying with the regulations of the authority as to the mode of connexion. Section 4. "Land and premises are defined to include messuages, buildings, lands, easements, and hereditaments of any tenure," which clearly appears to include factories.

Rivers Pollution Prevention Act, 1876.

By the passing of this Act prescriptive rights to pollute rivers or streams were largely affected, as it was made an offence to put into a stream "any poisonous, noxious, or polluting liquid proceeding from any factory or manufacturing process." But the sweeping effect of this enactment was considerably curtailed by other provisions which clearly showed that Parliament did not intend the Act to be made a means of harassing the manufacturing community, and that the Legislature recognised the importance of interfering as little as possible with the staple trade of the country. With one exception (immaterial to the present Paper) proceedings are only to be taken by a sanitary authority, and then only with the consent of the Local Government Board. Before giving any consent that Board are to "have regard to the industrial interests involved in the case," and to the "circumstances and requirements of the locality." and must further be satisfied that "means for rendering harmless" the polluting liquids "are reasonably practicable and available under all the circumstances of the case, and that no material injury" to the industry involved will result. In other words, the mere fact that polluting liquids are discharged from a factory is not in itself to constitute an offence. Questions of cost to the manufacturer and efficiency of any possible treatment are amongst other matters to be considered by the Local Government Board in connexion with any proposed proceedings.

Local Government Act, 1888.

The Act of 1876 remained practically a dead letter until the Local Government Act of 1888 enabled County Councils to enforce it, and also provided for joint committees of local authorities being formed for the same purpose. In 1891 the Mersey and Irwell Joint Committee and the Ribble Joint Committee were formed, followed two years later by the body now known as the West Riding of Yorkshire Rivers Board. Since then the Mersey and Irwell Joint Committee and the West Riding of Yorkshire Rivers Board have obtained special Acts of Parliament, by which proceedings, under similar restrictions to those contained in the Rivers Pollution Prevention Act of 1876, may be taken in the magistrates' court and penalties recovered without an order being made.

With respect to solids, under the Act of 1892 the manufacturer would be prevented from putting his ashes, &c., in such a position as to render it liable to fall or be carried into a stream. In other respects these special Acts did not materially alter the law, but their enforcement has given rise to great controversy.

The question will suggest itself here: If a millowner can no longer discharge his waste liquids into the streams without fear of litigation, can he not solve the difficulty by passing them into the public sewer?

The answer to this question depends upon the construction put upon the two Acts of Parliament already referred to—viz., the Public Health Act, 1875, and the Rivers Pollution Prevention Act, 1876. Section 21 of the first-mentioned Act, as already stated, empowers the owner or occupier of any premises to empty his drains into the public sewer, and "premises" include factories of all kinds. But it has been contended that a local authority can only be compelled under this Act to receive domestic sewage, and not manufacturing liquids. Apart from other considerations, colour is given to this contention by the fact that Section 7 of the Rivers Pollution Prevention Act (that is to say, a section of an Act passed a year later) declared that facilities should be given by local authorities to enable manufacturers to carry their waste liquids into the public sewers.

The point has been before the courts several times of late years, but the judgments are not so clear as could be desired. Notwithstanding that two of them favour the view that a manufacturer has a right under the Public Health Act to drain into a sewer, yet having regard to the general view of the whole legal situation, it will probably be advisable for mill occupiers to carefully consider the provisions of the Rivers Pollution Prevention Act, 1876, Section 7 of which Act says, every "local authority having sewers under their control, shall give facilities for enabling manufacturers within their district to carry the liquids proceeding from their factories or manufacturing processes into such sewer." So far so good, but these "facilities" are considerably limited by the provisoes that follow.

1. The authority cannot be compelled to receive liquids which prejudicially affect the structure of the sewers.

2. The authority cannot be compelled to receive a liquid which would prejudicially affect the sale or the agricultural application of the sewage. Nowadays cases must be rare which could fall within this restriction so far as regards sale, although it should be borne in mind that a quarter of a century ago, when the Act was passed, it was no doubt more generally thought that sewage might be a marketable commodity.

3. Liquids which, by their temperature or other characteristics, cause a nuisance to health are likewise within the provisoes.

4. Facilities cannot be required when the sewers are only sufficient for taking the ordinary sewage of the district. Undoubtedly this is a ground of refusal behind which a Local Authority may easily shield itself from assisting its largest ratepayers. Moreover, it is by no means clear that in laying down new sewers it is the duty of the Authority under this Act to make provision for trade effluents; and, further, it is not clear that when preparing a scheme for sewerage works provision should be made for trade effluents.

5. The granting of facilities must not interfere with any order of a court respecting the sewage of the district. In other words the taking of trade effluents must not cause the Local Authority to break any order of court ordering them to abstain from the pollution of a stream.

From these provisoes it will be seen that the position of a manufacturer under the Rivers Pollution Prevention Act is much less favourable than it would be under the Public Health Act, if that Act was conclusively and finally held to confer an independent right to discharge trade liquid into the sewers.

But taking matters as they are, let us consider what conditions (if any) a local authority can impose before granting "facilities" under the Act of 1876. In the absence of any direct provision of the legislature on this point it may be assumed that the authority can impose such regulations as may be required to prevent any breach of the provisoes to Section 7 and kindred restrictions. Thus conditions may be made as to the extraction of solids, and for the preliminary treatment of such effluents as

would otherwise, when in a sewer, cause injury to health, or interfere with the sale of the sewage, or damage the structure of the sewer, &c. In an ordinary way the authority could not demand any monetary consideration for allowing the connexion, but they might do so before they took any effluent which by law they were not bound to take. Perhaps they might also be entitled to lay down reasonable regulations as to the time and mode of discharge.

When a connexion with the sewer has once been permitted or authorised by the Local Authority, the latter will have great difficulty in legally cutting off the same, more especially after the lapse of years.

Shortly, it may be stated that a millowner can be prevented (unless he has acquired prescriptive rights, and whether he can do so or not is, perhaps, doubtful) from discharging into the sewer matters falling within the provisoes to Section 7, or being injurious to health or interfering with the free flow of the sewage. Apart from this the connexion cannot be interfered with. There is one set of cases where even the right of admission to sewers will not avail the millowner. That is where water is taken from a stream for manufacturing purposes; a riparian proprietor lower down may insist on the water being returned after user in order to prevent a diminution of the stream, unless, indeed, a prescriptive right to discharge the water elsewhere than into the stream has been acquired.

The legal position of a manufacturer may be summarised thus :—

1. A millowner can be proceeded against in respect of polluting liquids passing from his premises into a stream, but no proceedings may be taken without the consent of the Local Government Board, and upon the manner in which the Local Government Board construe their duty under this head largely depends the reality or otherwise of the safeguards imposed for the protection of the industries.

2. Even if, as Mr. Justice Charles held, Section 21 of the Public Health Act, 1875, gave an absolute right to discharge trade liquids into the public sewers, this right would appear to be qualified by the Rivers Pollution Prevention Act, 1876, Section 7, and, if so, is subject to the restrictions and limitations contained in the provisoes to that section.

3. If a connexion be once made with the sewer with the consent of the local authority, the latter can only prevent the discharge of such trade effluents through it as cause a breach of one of the above-mentioned provisoes.

As to the first of these positions, Section 11, Sub-section 5, is the clause which was inserted in the West Riding of Yorkshire Rivers Act, 1894, as a protection to "industry or trade," and this section provides that "the Rivers Board shall not take proceedings against any person under this part of this Act, and the Local Government Board shall not give their consent to such proceedings, unless the Rivers Board and the Local Government Board respectively are satisfied, after due inquiry, and having regard to the reasonableness of the cost and the effect on the industry or trade in question, that means for rendering harmless the poisonous, noxious, or polluting liquid are reasonably practicable and available under all the circumstances of the case, and that no material injury will be inflicted by such proceedings on the interests of such industry or trade."

On the face of it this clause appears to afford some protection to the industry, but in practice it is not so. The manufacturer expected that the Local Government Board would require the Rivers Board, who are the prosecutors, to prove their case by showing that "having regard to the reasonableness of the cost and the effect on the industry or trade in question means for rendering harmless the poisonous, noxious, or polluting liquid are reasonably practicable and available under all the circumstances of the case, and that no material injury will be inflicted by such proceedings on the interests of such industry or trade."

Instead of this, however, the Local Government Board throw upon the manufacturer the onus of proving the contrary.

The evidence given by the officials of the Rivers Board at the Local Government Board inquiries under this Act is confined to the following points :—

"1. That the trade liquid is polluting, which is proved by analysis.

2. That means are known for purifying liquids of the like character.

3. That the Rivers Board were not aware of any circumstances why such means should not be applied in the particular case under inquiry."

No evidence is given to show specifically by what process this can be done, or as to what may be the probable capital cost, or the annual cost of continuing the process, so as to enable the inspector to form an opinion as to whether the business can afford to undertake the cost, or will be unable to do so. The importance of this part of the question lies in the fact that the Local Government Board's inquiry is virtually the only opportunity afforded to traders by the Act, of ascertaining the nature and cost of the works and processes to be established and carried out for the purpose of rendering harmless the trade effluents; for whether the conditions of the sub-sections can or cannot be complied with, is a question which cannot be raised before the justices on the prosecution for penalties. When the consent of the Local Government Board has been given the only evidence required to be given before the justices is as to the fact of pollution. So that, practically, the only thing left for a manufacturer to do is to put down a plant and purify his trade waters before discharging them into either the river or into the public sewer. This involves the manufacturers and the trade generally in a very serious financial responsibility. In cases known to me, the annual cost of treating the trade waters would amount to more than the full rateable value of the works. This new tax upon the trade must be admitted to be a very serious one, and has caused considerable anxiety and trouble in the districts where the Acts are being enforced by Boards established for the purpose, such as is the case in the West Riding of Yorkshire.

But this feature of the position is not the only one the manufacturer complains of. Any new imposition which may fall upon a particular trade or industry, although not welcomed by the trade in these days when foreign competition is being so severely felt, is yet robbed of a ground for serious objection and complaint if it falls equally upon all engaged in the trade.

The following figures will show the position I refer to :—

—	No. of Manufactories discharging into Public Sewers.	No. of Manufactories discharging into Rivers and Streams.	Total.
Mersey and Irwell District	250	413	663
West Riding of Yorkshire	751	1,249	2,000
	1,001	1,662	2,663

By these figures it will be seen that out of 2,663 manufactories in these two districts, 1,001 are discharging their trade waters into the public sewers, and so escaping the cost and responsibility which falls upon the remaining 1,662 manufacturers, who discharge into the rivers and streams.

The effect of this is, that some manufacturers who are not connected to the public sewer, making the same class of goods as their neighbours who are connected to the public sewer, which goods have to be sold probably to the same buyer, or at all events in the same market, have not only to bear the expense of purifying their own trade waters, but contribute largely through the rates towards the cost of purifying those of their neighbours and competitors.

Thirty-eight per cent. of the trade get off practically scot free, and 62 per cent. have to bear a tax of, on the average, 10s. to 12s. in the £, and contribute, in addition, to rates which are increased by the advantageous position occupied by 38 per cent. of their competitors.

This seems to be fair ground for complaint. The manufacturers whose works are upon the stream have in times past been considered to occupy a position of great advantage by reason of the facilities for disposing of their fouled trade waters. That advantage has been taken away by the legislature, and they are now handicapped by a serious financial responsibility.

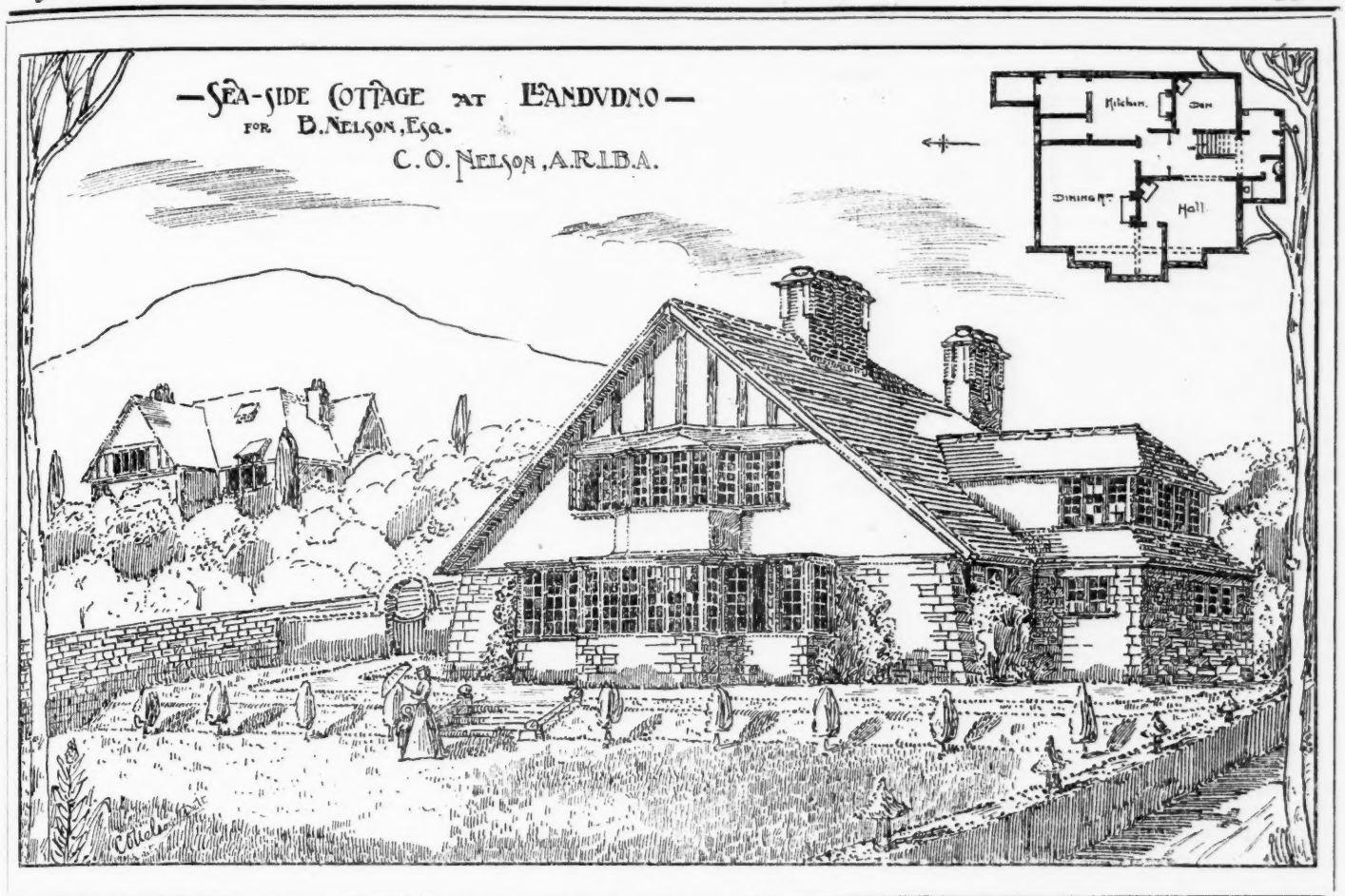
In other words, the liability to purify the trade waters in some cases renders the works, as such, of no value whatever, and this, with the uncertainty of being able to satisfy the officials of the Rivers Board (no standard of purity having been fixed), makes it advisable in some cases to close the premises and move into a district where the Sanitary Authority admits all fouled waters into the public sewers.

A most discouraging and unsatisfactory condition, which at the outset faces a manufacturer, is the fact that the known methods of dealing with trade waters, so as to render them fit to be discharged into a running stream, with a reasonable prospect of satisfying the Rivers Board, are only in the experimental stage, and the manufacturer has reason to fear that after he has expended his capital, he may be called upon to enter upon further capital expenditure by altering or extending his works so as to bring his effluent up to a standard of purity which may be raised from time to time. In the Mersey and Irwell district, out of 398 works which were constructed between 1893 and 1898, 144 were declared to be "not efficient."

Generally, the position seems to be that, prior to 1875, manufacturers were on an equal footing with respect to their trade waters. One section of them discharged into the rivers and streams, and the other into public sewers, neither having financial responsibility with reference to such discharge. Parliament then by the Act of 1876—if its true construction is that it limits the right which, according to Mr. Justice Charles, was conferred by Section 21 of the Public Health Act, 1875—practically confiscated the rights of those who discharged into the rivers and streams, for the provisoes attached to Section 7 of the Act of 1876 are really prohibitive. The whole question is a very difficult one, and objections can be taken to almost any remedy that can be suggested; but it does seem that the simple plan would be to put upon Sanitary Authorities the duty of receiving into their sewers all trade refuse waters, and so placing all manufacturers upon an equality, and letting the cost fall on the community, who benefit by the existence of the works which produce the trade waters.

Mr. Vernon, in proposing a vote of thanks to Mr. Hanson, said the Paper was a most interesting one, and the case had been clearly put from a mill-owner's point of view. All mill-owners had a difficulty in disposing of their trade refuse, and the law governing such disposal was irregular in its application. But it was obvious that districts must be treated differently, having regard to the natural features of the locality, and it was therefore necessary to allow room for the exercise of discretion to those whose duty it was to administer the law. He called to mind a river in Yorkshire on whose banks are a large number of mills, which was quite innocent of foliage, and he did not think that a mill in a place such as that should be placed under the same restrictions as one situated amid beautiful surroundings. Nevertheless, there was sometimes too little attention paid to trade wants, and at other times they were allowed to benefit at the expense of the remainder of the ratepayers. Mr. Hanson had cited the case of a mill having to dispose of 400,000 gallons of refuse water daily, and it certainly seemed unfair to call on the ratepayers, who had nothing to do with the manufactory, to provide a means of disposing of this enormous quantity of water. He did not regard the system of admitting trade effluent to the public sewers where land treatment was adopted as a success, because certain chemicals in a short time filled up the pores of the gravel and rendered it unfit for its purpose. They all looked to science, which had made such strides recently, to solve the problem, as it had already aided the gas factors, and enabled them to turn to excellent account those products which were formerly regarded as being not only useless, but a nuisance.

Colonel Jones said that the opinion he had held for many years was that land only was the proper mode of treating sewage, and the interim report of the Royal Commission recently issued supported his theory. It must be remembered that the country is so dependent on trade that in all legislation its interests must be considered. From the statistics supplied by Mr. Hanson it was seen that of the works which mill-owners had been compelled to erect for the purification of trade refuse nearly 40 per cent. were now declared to be failures, and this was very hard on the owners. He agreed with Mr. Vernon that their greatest hope of a satisfactory solution of the difficulty rested on the profitable realisation of waste waters, which the rapid advance of



science gave them reasonable cause to consider a possibility of the near future. He had pleasure in seconding the vote of thanks.

Mr. Stephen said there were certain trade centres dedicated to profit, and it was undeniable that people went to those centres, and by doing so went also to the nuisance, and that the nuisance was not brought to them. There should be a marked distinction made between those waste products that are injurious to health and those that are not, and the public should be educated to appreciate the dangers arising from the refuse of various trades. No epidemic could be spread by the effluent from a dye works, but, on the contrary, the strong acids must tend to destroy the germs of disease, and, consequently, a certain elasticity in the law was necessary to enable each case to be dealt with on its merits. There was far greater injury done to health by the poisonous gases contained in the air of a manufacturing district, which we are bound to breathe, than by impure water which we are not bound to drink. Any interference with the manufacturer's working tended to paralyse trade, and to kill industry was to kill the town; for this reason legislation was attended with considerable difficulty. The cost of works for the purification of trade refuse seemed heavy, but, compared with the amount of injury done to private property by trade effluents and the invasion of beautiful districts by noxious gases, it was small. The essential point was that a mill-owner should not be compelled to erect works until it had been proved that the system of purification to be adopted was successful.

The Chairman said the first Paper he ever listened to in that Institution was on the same subject as that they had just heard, and was read by his predecessor in office, Mr. John Shaw, who, he knew they would all be glad to hear, had now been completely restored to health. Since that time much had been done to prevent pollution of rivers. He remembered an action brought by the owner of an estate situated some distance below a galvanised iron and steel works, because his swans were painted yellow below the water-line by the effluent from these works and presented such a horrible appearance when they came ashore. This river was now pure. Although the cost to manufacturers to purify their refuse was heavy, it certainly did not seem right that the stream, from mill to sea, should be polluted.

The vote of thanks was then put to the meeting and carried unanimously.

Mr. Hanson, in reply, said he wished it to be understood that neither he nor the manufacturers desired the present condition of the rivers to continue. They recognised the need of improvement, but required some reasonable guarantee that when money was expended it should be on effective work and have some limit to it. He remembered a statement in the House of Commons by the Member for Barry to the effect that the manufacturers of Lancashire had spent 2,000,000*l.* on works for the purification of refuse, and the rivers were not 5*s.* better for it. He was convinced that scientific investigation would result in a method of purification without unduly affecting manufacturers. The bacterial treatment could not be utilised for purification of trade waters, as bacteria could not live in some strong chemicals, and 10,000*l.* had been expended by Leeds in one year on experiments, without satisfactory results.

The meeting then terminated.

COTTAGE, LLANDUDNO.

THE drawing shows a small seaside residence to be erected at Llandudno on a site near Little Orme, having splendid views of sea and mountains. It will be built of local blue limestone, with brick lining and rough cast, with grey slates. Mr. C. O. Nelson, of London, is the architect.

MAGAZINES AND REVIEWS.

THE *Art Journal* contains an article by Mr. Heywood Sumner on "Sgraffito as a Method of Wall Decoration." This is essentially a practical article—what the author calls a "dull" one, but it is exceedingly useful as a description of the details of the process, by an artist who has had large experience in it. There are some remarks at the close, however, as to the artistic possibilities of sgraffito, depending on "simplicity of expression and a rigid selection of your graphic materials" . . . . "you must welcome line as your means of expression, and instead of aiming at an impossible realism, you must try to find the vitally expressive line, the essential character, movement, posture, growth and colour; in short, the graphic generalisation of the natural forms with which your decoration is concerned." This could not be summed up better. Several interesting illustrations accompany the article. The number includes an article on Sir Thomas Lawrence, by Mr. G. D. Leslie and Mr. F. A. Eaton, with numerous illustrations from his graceful but hardly great works in portraiture.

In the *Magazine of Art* an article on Miss Kate Greenaway's work gives us reproductions from a number of charming little studies from life. Mr. Spielmann, who writes the article, says that what Kate Greenaway did with her modest pencil was to revolutionise one form of book illustration, and to dress the children of two continents. This is a happy and true *résumé* of her artistic position and powers, and does not claim too much. Miss Greenaway was, it appears, a poet as well as an artist, and a sonnet of hers given at the close of the article is very beautiful in feeling, though not quite perfect in versification. An article on "English Pictures in France" describes the collection of one Frenchman, M. Chéramy, who appears to possess some good Constables (better examples, we are told, than any in the Louvre), besides examples of Turner and Bonington. The frontispiece of the number is a reproduction of Mr. Arnesby Brown's "Morning," bought with the Chantrey fund.

In the *Berliner Architekturwelt* the illustrations of some competition designs for a Wagner Memorial for Berlin are very interesting, and show a good deal of power and originality. The second-prize design (Herr Freese, sculptor, and Herr Brurein, architect) shows the composer enthroned in the centre of an exedra formed by a flanking wall with a half return at each end; at the extremity of each return is a heavily-draped female figure in a musing attitude; the one on the right of the spectator, of which a larger illustration is given, is very fine. The third-premium design, by Herr Hosæus, shows a bronze equestrian statue of an armed knight with a lyre, on a lofty pedestal; the bust of the composer is placed below in a niche in the front of the pedestal; the equestrian group is in a grand and forcible style, but the whole design is deficient in simplicity and unity of treatment in the accessories, and in this respect very inferior to the second premium design, which is one of unusual dignity and intellectual interest. The illustrations of the Children's Hospital, by Herr Hoffmann, in the same issue, are interesting, but no plan is given.

The *Architektonische Rundschau* (vol. xviii., part 3) contains as usual a great variety of illustrations of continental work (nothing English seems to get into it), but nothing that is worth special comment, unless it be the view of the interior of a swimming bath by Herr Hoffmann, of Berlin, which shows some novelty of treatment both in general design and in the carved decoration, which, though a little *bizarre*, is far more interesting than anything

of the kind that could be found in any London swimming bath.

Among the contents of the *Artist* is an article on a Spanish artist, Senor Moreno Carbonero, who appears to have directed his attention largely to illustrating Don Quixote and Gil Blas with a great deal of dramatic vigour. A short article calls attention to a very important subject—the necessity for improvement in our street decoration on such occasions as a coronation. The writer says truly—

"In June next will swarm from every quarter of the globe sons and daughters of every colony and dependency eager to see the crowning of the King, and also to see what the old mother of all of them, one who should be their leader in matters of taste and cultivation, can do to pay his Majesty honour as he passes.

It would be a strange thing indeed if most of them should go home again, saying that the Old Country was behind them, at least in the decoration of their streets; that they themselves had done far better when the Prince and Princess of Wales had visited them; that a Canadian, for instance, should say, 'The Dominion was represented by a flag or so, a motto or two, huddled amongst yards of red calico'; and so all the others.

We put up all this trumpery because it has become customary, and because it saves a great deal of thought and trouble to be able to go to a shop and order our houses to be done, and to leave it to the people of the shop to do it as they please; but it is not because we could not get it well done, and probably for no greater cost, if we chose."

When we think of what kind of public decorations are carried out in Paris, for instance, on the occasion of a visit of some reigning Sovereign, we ought to stir ourselves up to do, for the coronation of our own Sovereign, something better and more complete than has hitherto been seen in London.

In the *Contemporary Review* Mr. Clement Edwards writes on the question "Do Trade Unions Limit Output?" obviously from the trade-unions' point of view. He makes some points in favour of the trade-unions, but any one who reads between the lines will see, as we have seen in other cases, that even their own champions are sometimes obliged to fall back on the unsatisfactory argument that "it is not all our fault." The author says—

"The general trade-union attitude toward apprentices I believe to be necessary for maintaining their minimum wage, and therefore in the best ultimate interests of the trades."

Apprenticeship is the best way of learning a trade, but that is of no consequence; the object is not to learn the trade in the best way, but to keep up wages. That is all the argument amounts to; and a very significant one it is, and goes a good way towards giving away the defence.

The *Nineteenth Century* contains another article on the same subject—"British Labour: a Workman's View," by Mr. James G. Hutchinson, who, we gather, is or has been himself a working man. His opinion is that both inside and outside of trades-unionism there are workmen who will not, if they can help it, do a fair day's work, and that the influence of the trades-unions in the matter is "negligible," in support of which he gives some facts out of his own experience. He says however, on another page, "as a workman I must admit that the workmen, taking them generally, do 'go easy;' while, on the other hand, it is equally obvious that the employers have been very shortsighted in their policy to allow the workmen, *through their unions, to get so palpably the upper hand*." The italics are ours, and need no comment. The article is a very fairly written one, much more so than most utterances on the subject which we have come across; and the following passage is worth special attention, as emphasising a factor in the case which has been rather overlooked:—

"In any comparisons between workshop conditions and practice thirty or forty years ago and the present time allowance should be made for the great change which has come between the master and workman in their industrial relations. At the former period—even in the large workshops to which the best operatives naturally gravitate—the workman would invariably come in close contact with, and be known personally to, his employer; and often this fact alone, independent of the 'master's eye,' was a great incentive to increased effort on his part, in the hope and determination of deserving and winning advancement. While at the present time, even in some of the same shops, the employer has got too big a man to personally conduct his own business, with the result that the workman is entirely at the mercy of the managers and foremen, who too often, not caring to encourage individual effort in this direction, show favouritism to their own friends and partisans rather than further their employer's interest in the selection and retention of the best workmen; and thus the superior craftsman, with a laudable ambition to raise himself, is handicapped and pushed from pillar to post, until, wearied with waiting for opportunities which do not arise, *he makes them*, either by taking a position as foreman or starting in business on his own account."

In reference to the same subject the reader may be advised to look at Mr. G. J. Holyoake's article in the *Fortnightly Review*—"Higher Co-operation: its Inner History." The article deals with other subjects than the position of the working-man, but the author speaks strongly in favour of the principle of giving the working-man an interest in the profits of the firm. "One merit of participation is that it inspires workmen with higher aims," as we have no doubt it should do.

"The dislike to admit workmen to a share of consultative and suggestive control arises from reluctance to recognise administrative equality in the workman—not seeing that gain lies that way. A workman observes costly mistakes made which he could avoid. He knows of time-saving and money-saving devices upon which he is silent, because it is not his interest to disclose them. Were he to speak, it would probably be resented as interference and presumption. A colliery owner at Normanton owned that his men, by care and vigilance, could save him 3,000*l*. a year. The answer given him was, 'Why not give them 1,500*l*, and you will save 1,500*l*. by the concession?' which he did. Let workmen be *assured* that profit will fall to them if they put thought and character into their work, and in time they will do so."

The same magazine contains a very interesting article by a French contributor, M. Georges Bourdon; on "Staging in French and English Theatres." English readers may be surprised (and agreeably surprised) to find that a French critic on the subject considers that our theatres are at the present moment far in advance of the best French houses in stage machinery and in the artistic mounting of plays, and that more trouble and expense is gone into with this object in London than in Paris. The facts given seem entirely to bear out this view.

The *Engineering Magazine* contains a very useful article by Mr. Jacques Boyer on "Practical Applications of Re-inforced Concrete," which reviews several recent forms of combining iron and concrete (among others the Cottançin system described in our last issue), giving diagrams of the various methods of construction. "The Home Environment of British Working-men," by Mr. Percy Longmuir, touches again on the British trade question, from a new standpoint. He thinks the charge against the trade-unions overdrawn:

"The dominating policy of trades unionism has undoubtedly restricted the expansion of British trade; but, in all honesty, can the extremely rapid development of the United States, for instance, be traced solely to the absence of this hindrance? May there not be in addition to the restrictive union policy, other causes at work in Britain which limit progress and effectually bar advance? Is there not room for improvement in British commercial methods, and in the education of employer, workman, and merchant? Are the present conditions of British works, their management, and their workmen, such as will result in an ever-increasing standard of efficiency, combined with a low or decreasing cost of production, in an article which must meet competition in home and foreign markets alike?"

The general tendency of the article is to the effect that employers must think more of ameliorating the condition, circumstances, and opportunities of education of the working men, if they wished to get the best out of them. An article on the Isthmian Canal, by General Abbot, goes to show that the Panama route, whatever its difficulties, is more practicable than the Nicaragua route, and more likely, if the canal were once made, to be a permanent success. Other articles in the issue are on "European and American Steam Engineering," "The Rotary Converter," and "Isolated Electric Plants." The latter, by Mr. Isaac D. Parsons, is an inquiry into the relative cost of generating electricity in an isolated plant or procuring it from a central station. The subject is to be continued in a future number.

A thoughtful article by Mr. W. R. Cooper on the "Production of Electrical Energy from Carbon," appears in *Feilden's Magazine*. He points out that the commercial value of a carbon consuming battery, supposing one were discovered in which the carbon is efficiently consumed, and the cost of the other constituents small, would not be nearly so great as is generally supposed. Taking the average costs of the generation and distribution of electric power from a central station, he finds that the cost of the coal amounts only to 18·5 per cent. of the total costs. Hence, even if a perfect carbon battery were invented which would consume only about one twelfth the present amount of fuel the total saving would only be 17 per cent. This percentage would not make much difference in the cost of the electric light to the consumer, and would certainly not revolutionise the industry. Clear diagrams and descriptions are given of the Jacques cell and the Blumenberg cell, and various defects in their design are mentioned. Mr. Cooper thinks that the extravagant claims made by Jacques for his cell are little likely to be realised. Another article in the same magazine is on the Vattellina Electric Railway, which was so much discussed in the arbitration case on the Underground Electric Railway. This railway is 66 miles long, and is operated electrically from a power station which distributes current at 20,000 volts to various sub-stations, where it is converted down to 3,000 volts, at which pressure it is collected from the trolley wires by aluminium rollers, and taken direct to the motors on the locomotives. The passenger trains run at forty miles per hour when the gradient is not more than 10 per cent., and at steeper gradients they run at twenty miles per hour, the motors being put in cascade. Very special precautions have had to be taken to guard the line against lightning. The working of this railway will be watched with great interest by engineers, as it seems likely to be the type of railway that will be used in the future. The article is illustrated with interesting photographs. Another electrical article in this magazine deserving of mention is the description of the electrical power installation at Palmer's shipbuilding works. This is specially interesting, as it is one of the first large three-phase plants to be laid down in this country, and it seems to us that this system of driving machines and operating tools in factories could be adopted with advantage wherever a private power-house has to be built.

An interesting article in the *Antiquary* is Mr. Clephan's on "Ancient Egyptian Beads and Symbols," founded on examples in the writer's own collection. Dr. Cox gives a sympathetic review of Mr. Banister Fletcher's "History of Architecture." There is also an article by Mr. Miller Christy and Mr. W. W. Porteous on "Some Essex Brasses Illustrative of Elizabethan Costume," with illustrations. Amongst "Notes of the Month" we read that the works in course of being carried out on the canal at Treves continue to bring to light Roman antiquities. About the middle of November a fine tessellated pavement was discovered at a depth of about four yards. It showed two medallions, with representations in one of a woman holding a vase and spear, in the other of two lions. The pavement will be removed to the Provincial Museum.

Harper's Magazine contains the first popular article we have ever seen on what may be called theoretical geometry—"The Fairy-land of Geometry" is the title, and it is an attempt by Dr. Simon Newcomb to convey to general readers some idea of the reasoning of higher mathematicians on the subject of the fourth dimension and the non-Euclidian theory of space and of parallel lines. It is at all events very interesting reading on a subject which has a fascination for many minds. Mr. Sydney Brooks compares London and New York, socially, architecturally, and in other respects, and comes to the conclusion that the one is meant as the complement to the other, and that "the ideal city is only to be constructed by mingling the best points of both." New York, he admits, represents "an undisguised triumph of mechanics over æsthetics" which makes it, for an Englishman, "rather a deadening city to live in." That is a consoling reflection, as coming from an American publication.

Scribner, under "The Field of Art," gives a description of the colour scheme of the Buffalo Exhibition buildings; the first time, says the writer (and author of the scheme), Mr. C. Y. Turner, that, to his knowledge, a general scheme of colour has been undertaken and carried out in any exhibition of the kind. The following passage gives an idea of what was aimed at:

"The tower alone of all the buildings is treated with metallic gold in considerable abundance, and

its panels have received the brightest blue-green we could procure. All this is intended to suggest the colour and the brilliancy of the water at the crest of Niagara Falls. The statuary is treated in white, as it was my belief that this would form a pleasant contrast and make the colour more apparent. Lamps and urns are treated as green bronze, and the flagstaffs are treated in a similar way, except the greater ones, which have been made to harmonise with the buildings in their immediate neighbourhood—cool at the north ends of the grounds and warmer in colour at the south. The great piers at the entrance, and which support sculptured groups, are soft, warm grey, but the neighbouring pergolas being small in their parts, slender and light, are treated in much brighter colours. The notes of green, gold, ivory, blue, and red are distributed throughout all the buildings, so that the remark was just which a critic made to me: 'I see you are using the Pan-American colours on buildings—red, white, blue, green, and yellow.'"

The *Pall Mall Magazine* includes an article by Mr. H. G. Archer on "Tunnelling the Alps," illustrated by photographs by the author; the subject is treated (naturally) rather from the picturesque than the engineering point of view. "The Strange Story of the Portland Vase" is told by Mr. A. W. Jarvis, and will interest those to whom it is not already known. Some good illustrations of the figure subjects on the vase are given.

We have received the *Revue Générale* and the *Gentleman's Magazine*, which this month contain nothing of special interest to our readers.

ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE sixth meeting of the Discussion Section of the Architectural Association for this session was held at 56, Great Marlborough-street, W., on the 10th inst., when Mr. P. W. Mulready read a paper entitled "The Work and Influence of Augustus Welby Pugin." The author dealt with the subject in a most interesting manner under the following headings, viz.:—

1. Introductory.
2. Biographical sketch.
3. Notice of his works.
4. His connexion with the Houses of Parliament.
5. His literary work.
6. His principles, and the changes they wrought in architecture.
7. His principles applied to to-day.
8. The character of Augustus Welby Pugin.

The paper was illustrated with a number of original drawings and some of Pugin's early sketch-books, which had been very kindly lent by Mr. Peter Paul Pugin and Mr. Pugin Powell, and were of great interest and value in showing the remarkable power of draughtsmanship possessed by the great Gothic architect.

The discussion was opened by Mr. Geoffry Lucas, who proposed a vote of thanks to the author and remarked that the influence of early life was very pronounced in the character of Augustus Welby Pugin, who was fortunate in being the son of an architect. It was pleasing to hear such definite statements from the reader of the paper concerning Pugin's connexion with the Houses of Parliament.

Mr. P. Turner, in seconding the vote of thanks, said he was sorry the question of the Houses of Parliament had been raised, as he thought it had been settled that Sir Charles Barry was entitled to the credit of being the architect of those fine buildings.

Mr. E. W. Davis, in supporting the vote of thanks, spoke of the high ideals of Augustus Welby Pugin and his remarkable industry.

Mr. R. H. Weymouth, Chairman, said there was undoubtedly room enough for the talent of both great men in the designing of such a magnificent work as the Houses of Parliament. He wished to draw attention to the simple expressive drawings which had been so kindly lent for the purposes of this meeting, and compare the draughtsmanship with that employed by some men of to-day. It was a great pleasure to the members of the Discussion Section to have their President and Vice-President with them on this occasion, also their good friend, the Editor of the *Builder*.

Mr. Statham said he had listened to the paper with much pleasure. In regard to the connexion between Pugin's religious architectural faith, he remembered a letter in which Pugin said, "I am just completing a fine church" (mentioning the place), "and when it is finished I think I shall become a Catholic"—or words to that effect. The great point in Pugin's churches was the effect of loftiness which he obtained in the interior, by carrying up the arcade to the greatest possible height, with only a small clearstory above it. The drawback was that much of the detail was plaster, as Browning had pointed out in some humorous lines in "Bishop Blougram's Apology."

Mr. Fellowes Prynne said it was extremely pleasing to hear such a good word for Gothic architecture. It always seemed to him that the work of Augustus Welby Pugin showed a great earnestness and directness of purpose as well as enthusiasm.

Mr. Howard Seth-Smith, the President of the Architectural Association, was then called upon by the Chairman to sum up the discussion, which he did in a most interesting manner. He wished to emphasise the importance of carefully studying Gothic work. He looked forward to the time when all schools of architecture would adopt the principles of Augustus Welby Pugin. It was interesting to note the enormous amount of care devoted to the details of subordinate work. Apart from religion, he thought, no great art had risen to sublimity, and it was noteworthy to remark the earnestness and devotion displayed by Pugin.

The vote of thanks to the author for his paper, to Messrs. Peter Paul Pugin and Pugin Powell for the loans of drawings, and to Messrs. H. H. Statham, Fellowes Prynne, and Howard Seth-Smith for so kindly attending as special Visitors, was passed with acclamation. Mr. Mulready having replied, the meeting terminated.

It was announced that the next meeting would be held on the 24th inst., when Mr. F. G. W. Buss will read a paper on "The Clerk of Works: His Duties and Responsibilities."

ARCHITECTURAL SOCIETIES.

MANCHESTER SOCIETY OF ARCHITECTS.—The fourth meeting of the winter session was held at 44, Mosley-street, on Thursday, January 9, Mr. A. Darbyshire, President, in the chair, when Mr. J. D. Crace read a paper on the "Relation of Colour to Architecture." Colour decoration, he observed, included the highest works of pictorial art, but its limit was less wide than this. Colour decoration was the distribution of colour, whether in masses, bands, lines, or pictures, so far as it concerned the beauty of the structure or the purpose for which it was applied. The attitude of the decorator must be one of respect for the structural beauty of his subject. He must consider how his work would affect the architect's intention, for he could either aid or utterly annihilate the charm of the architecture. The decorative value of such work, moreover, was not always in direct proportion with the form of the artist. The decorative artist could not rely on examples of the past, he must continually have recourse to Nature for examples. He must remember, too, that he was the servant of the architect, and have some knowledge of architecture, so that he could sympathise with the idea of the architect, or he would fail to help him. He illustrated how the old decorators used to place a band of dark colour by the sides of the ribs of vaulted roofs, or the pictorial decorations would have a tendency to divert the eye from the ribs, and thus destroy expression of stability in the building. The eye must recognise the essential stability and the method of the structure, or the whole would be full of indecision and the sense of repose destroyed. In the decoration of horizontal roofs there was a danger of them being given the appearance of sagging. This was to be avoided by balancing the colour; by placing the darker or heavier colours in the corners, and marking in the panels by the heavier colours, giving the idea of stability and destroying the appearance of sagging. At the close of the paper Mr. Crace went round the room and pointed out the special points of interest in the numerous coloured drawings he had prepared of internal decorations.—The paper which should have been read by Mr. Halsey Ricardo on "The Revival of Gothic Architecture" at the last meeting is postponed, as on the date arranged for the paper (December 12) the train service between London and Manchester was upset by snowstorms. The monthly prize for a design for a shop was won by Mr. Claude Paterson. The November subject for a band stand was won by Mr. H. Solomon.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The usual monthly meeting of this Society was held on the 9th inst. in the lecture hall of the Literary and Philosophical Society, Leopold-street. Mr. P. Marshall presided. It was announced that the Society's prizes, for the best set of measured drawings of buildings within the Society's district had been awarded as follows:—1st prize, Mr. G. R. Norris; 2nd prize, Mr. D. B. Jenkinson. The whole of the drawings submitted were on view, and were afterwards criticised by Mr. C. Hadfield. Mr. William Watts, F.G.S., M.I.M.E., then delivered a lecture on "The Uses of Mortar and Concrete." He first spoke of hydraulic lime mortar, and then of the mixing and the use of mortars, remarking that the Romans had a good municipal rule bearing upon the subject. They made it compulsory on every builder that no lime should be used in any building unless it had been slaked at least three years. In conclusion, he dealt at some length with concrete and stone-breaking. The lecture was illustrated by drawings and diagrams.

ARCHITECTURAL ASSOCIATION OF IRELAND.—On Tuesday, the 7th inst., a meeting of this Association was held in the rooms at Lincoln-place, Mr. A. Scott in the chair, when Mr. P. J. Lynch, of Limerick, read a paper on the "Early Christian Architecture of Ireland." The paper, which was illustrated by numerous lantern views, treated of the architecture of Ireland from the earliest Christian times to the period of the Norman Invasion. Much of it was devoted to establishing the claim for a style of decorative architecture in Ireland anterior to the Norman Invasion. The resemblance between the Irish round towers and the Continental church towers at Ravenna, illustrated by views of both, was noticed, and the likeness between Lombardic and Irish architecture pointed out. The essential points of difference, however, were sufficient to establish a truly national style of architecture. The direct influence of the Lombard or Comacine masters on early Irish architecture had yet to be proved, though a strong plea was advanced for inquiry as to whether any portions of Cormac's Chapel, Cashel, might not be tenth century, as was generally supposed, until Petrie advanced it to the twelfth century, admitting at the same time that the records might mean a restoration. If this was a restoration, how far it extended was an interesting inquiry for the student of architecture. Views of other specimens of Irish architecture from the tenth to twelfth centuries were shown, concluding with the nun's church, Clonmacnoise, which Miss Stokes described as "lifting its mute form in silent witness to the life, as well as to the death, of native art." Mr. G. P. Sheridan, Vice-President, in proposing a vote of thanks to Mr. Lynch, said it occurred to him that the members of the Association might make measured drawings of the works shown on the slides by Mr. Lynch, to be reproduced in book form later. Such a book would meet with the ready approbation of the architects and public at large. All were deeply indebted to Mr. Lynch for sustaining, if not vivifying, their interest in their own architectural work.

ENGINEERING SOCIETIES.

THE INSTITUTION OF JUNIOR ENGINEERS.—A large number of members of this Institution availed themselves of the permission kindly accorded by the directors of the Mazawattee Tea Co. for visiting their extensive factories at New Cross on January 9. The works manager, Mr. Sidney Densham, the superintending engineer, Mr. J. C. Wallace, and other gentlemen showed the members over. The premises are full of features of engineering interest, and an extremely instructive afternoon was spent. Nearly five acres are occupied by the area of the factories, a prominent feature in their exterior being the chimney, 150 ft. high. Electric driving and lighting is employed, steam engines, &c., supplying the power, totalling about 1,000 horse. Water is obtained from an artesian well, 460 ft. deep, worked by compressed air, the delivery being 4,000 gallons per hour. The electric generating and distributing plant, tea leadfoil rolling plant, sprinkler installation, condensing plant, automatic tea packing and weighing machinery, tin-box making machinery, printing machinery, cocoa and chocolate machinery, &c., were all seen, the many ingenious devices in connexion therewith

receiving appreciative recognition.—The next meeting takes place at the Westminster Palace Hotel on Friday, February 7, when a paper is to be read by Mr. W. J. Cooper on "The Electric Passenger Elevator."

Illustrations.

NEW GREYFRIARS CHURCH, ABERDEEN.

THIS church is being erected by the Town Council of Aberdeen, as heritors of the Parish of Greyfriars, to take the place of the old building, which is to be demolished to make room for a large scheme of University building extension now about to be commenced. The church is to be built of finely-dressed light grey granite, including the steeple. The belfry stage is open, without glass, so that the granite groining which supports the spire will be seen, and also the bells, from the street below.

The oak carving taken from the old church is to be used again in the interior, and the fine east window of the old building is to be re-erected in the east end of the new church.

The drawing was exhibited in last year's Royal Academy. The architect is Mr. A. Marshall Mackenzie, R.S.A., of Aberdeen.

WALTON-ON-THAMES MUNICIPAL BUILDINGS.

THE design illustrated, for new municipal buildings for Walton-on-Thames, was placed first by the assessor, and selected by the Council.

The main ideas of the architects, Messrs. Macintosh & Newman, were:—The grouping together of the municipal offices and fire station with a view to a good architectural effect, and also economy in building; full provision for and consideration of the future extensions, so that when carried out they will work in harmoniously with the present scheme; and simplicity, both in plan and elevation.

We may further refer the reader to the full description of the design given in the review of the competition in our issue of November 23, 1901.

PALAZZO BEVILACQUA, VERONA.

THE Palazzo Bevilacqua stands on the south side of the Corso Cavour, Verona. It was designed by Sanmincheli about 1530 for the Verona branch of the Bevilacqua family, other branches of which possessed, or still possess in Bologna and Ferrara, palaces distinguished like this one at Verona by their crest, a wing.

On the ground floor, the front part, between the court and the street, which alone is due to Sanmincheli, is all open to the court except for one room at the side furthest from the door, while the upper floor, which is reached by an outside stair in the court, is divided into two large rooms, both originally built as a museum; hence the large windows and the unusual setting out of the whole front.

In the seventeenth century the family sold the collection, and to make the front rooms more habitable blocked up the whole of the small, and a large part of the large, windows, and put in a floor at about the level of the springing of the large windows.

Since then the palace has been very badly treated, the ground floor having been used for many years as a store for coal and coke, while the upper part has been allowed to go to ruin, many of the floors having actually fallen in. In 1901, however, it was said that it had been bought by the town to use again as a museum.

The front is built of a rather coarse limestone of a yellowish colour, which has stood the exposure to the weather very well.

W. CRUM WATSON.

GLASGOW ARCHITECTURAL CRAFTSMEN'S SOCIETY.—On Friday evening, the 10th inst., in the Chemistry Lecture-room of the Technical College, Mr. A. B. McDonald, City Engineer, addressed the members and friends of this Society, Professor Gourlay occupying the chair. The subject, entitled "The Highlands of Central Europe," was treated as a pictorial description of a tour down the Rhine Valley, through Switzerland and the Tyrol; and by means of lantern slides numerous beautiful views were exhibited of towns and villages, snow summits and gorges, passes and defiles, &c. Various examples of architectural interest were also shown.

COMPETITIONS.

SCHOOLS, TYWARDREATH.—The first premiated design in the competition for new schools, Tywardreath, Cornwall, was that sent in by Mr. W. J. Sambles, Tywardreath.

NORTHAMPTON AND COUNTY MODERN AND TECHNICAL SCHOOL.—We understand that the Governors of the Northampton and County Modern and Technical School have accepted plans for the extension of the school by the addition of chemical laboratories, lecture-rooms, boot and shoe shop, &c., and also for the erection of a master's house and boarding-house on Billing-road, Northampton. It will be remembered that the Governors asked architects to draw out plans embodying these schemes. The cost of the Billing-road buildings was not to exceed 4,000*l.*, and a similar amount was fixed for the extension and alteration of the present school. Mr. J. A. Gotch, of Kettering, was the assessor, and acting upon his recommendations the Governors, we understand, have accepted the plans prepared by Mr. Herbert Norman, of Market-square, Northampton, working in conjunction with Mr. McKewan, of Birmingham. We are informed further that a premium of 25 guineas has also been awarded to Mr. E. Danford, of Northampton, whose plans were regarded as the next best.—*Northampton Reporter.*

HARROGATE TOWN HALL.—At the monthly meeting of the Harrogate Town Council on the 13th inst., the question of the new Town Hall was discussed, and it was resolved that the Town Clerk and Borough Surveyor prepare the conditions and advertisement for competitive designs on the accommodation and area as recommended by the Committee, and that architects be informed that the sum to be expended on the building would not exceed 40,000*l.* Premiums of 150*l.*, 100*l.*, and 75*l.* would be offered for competitive designs.

Books.

A History of Architecture on the Comparative Method. By PROFESSOR BANISTER FLETCHER and BANISTER F. FLETCHER. Fourth Edition, Revised and Enlarged. London: B. T. Batsford. 1901.

SOME few years back the first edition of "A History of Architecture on the Comparative Method" was reviewed in these columns, and certain shortcomings, both in point of accuracy in details and in comprehensiveness of treatment, were duly noted. It is with all the greater satisfaction, therefore, that of the present edition we are able to say that it fulfils all legitimate expectations, and forms a complete, trustworthy, and extremely attractive manual of architectural history. Some corrections and minor improvements were made in the previous re-issues; but the new edition, for which the junior author is alone responsible (Professor B. Fletcher having died in 1899), is in many respects quite a new work.

Compared with the 1896 edition, the one before us is a much larger volume, and contains many more illustrations. Most of the original text has, Mr. B. F. Fletcher says in his new preface, been entirely re-written; but, beyond this, very important additions have been made throughout the book. Gothic architecture, for instance, both English and foreign, now receives much more attention; while the scope of the work is also widely, and most wisely, enlarged by including the architectural history of India, China, Japan, and the many lands once dominated by the Saracens. However much we may prefer the styles of Europe, no general study of architecture can properly ignore those of the rest of the world, and the more important of these are very well described here, especially considering the necessary briefness of their treatment. It is open to question whether the "non-historical styles," the title under which Saracenic, Indian, and several other varieties of architecture are set apart entirely by themselves, is a happy or even a logically good designation. But the author himself confesses to doubts as to their due places in a history, and may possibly on another occasion weld them in a little closer with what he calls the "historical" styles. For several disadvantages might be urged against this system of division, and it must strike many readers as a little quaint that the chapter on "prehistoric" architecture should have to be sought for in the specifically "historic" section.

Among the new features deserving mention are notices of Scottish, Irish, and American architecture; historical maps; an improved glossary; and many additional plates of plans, sections, and other geometrical illustrations of typical buildings of every style. These latter show much labour and skill in their selection and arrangement, and will add immensely to the usefulness of the book, both as a guide to beginners and as a work of reference for advanced students. The interesting series of birdseye views of all the English and the principal foreign cathedrals, photographed from models, should also be noticed in this connexion. The reproduction of the illustrations is in general admirable, even the most complicated drawings coming out clearly and effectively, while the photographic views of buildings leave hardly anything to be desired. A word of caution must be added—the printer should be better looked after in the poetical quotations. One well-known verse is made to appear thus:—

> "See what a love shell,
> Small and pure as a pearl.
> * * * *
> Frail, but a work divine,
> Made so fairly well,
> With delicate spire and wall, [!!]
> How exquisitely minute,
> A miracle of design."

This is hardly fair to the reputation of the author of "Maud," who has a right to be quoted correctly, if at all.

Taking the work as a whole, and accepting sundry minor blemishes as inseparable from so large an undertaking, Mr. Fletcher may well be congratulated on having produced such a serviceable text-book of universal architectural history, almost a condensed encyclopædia of the subject. It should be added that the illustrations of buildings are well authenticated by references to the authors from whom they have been copied or adapted—a point of the highest importance—and that the full lists of works to be consulted on special subjects should prove of great value to students; there is also a good index. We believe that the book has already met with considerable success; in its new form it ought to be secure of a prosperous future.

Manchester: The Cathedral and See. London: Geo. Bell & Sons. 1901.

THE see of Manchester dates but from 1847, and the church which is now the Cathedral is a building of the fifteenth and sixteenth centuries. In 1422 the church then standing, hitherto parochial, was made collegiate, and the buildings now known as Chetham's Hospital, on the north side, were originally the domestic buildings of the college. A chapter is devoted to their description and history. The church, although of late date, covers a considerable extent of ground, has double aisles to the nave (the outer aisles having originally been chapels), a large chapel of St. John Baptist north of the presbytery, with a smaller one or Ely chapel, these being balanced on the south by the Jesus and Fraser Chapels, and the octagonal chapter-house. Porches have been added in more recent times, the western entrance having lately been built from the designs of Mr. Basil Champneys. The chief point of interest in the interior is undoubtedly the woodwork of the stalls and screenwork in various parts of the building; the delicacy and elaborate effect of the former are well shown in a photograph give on p. 44. The building known as Chetham's Hospital has, like the church, gone through more than one change. Originally a mediæval mansion, it became a college in 1422 attached to the church, and in 1658 it was converted into a school founded by Humphrey Chetham. It has a picturesque interior, the chief buildings surrounding a cloister court. The book is throughout excellently illustrated from photographs. Ground plans of the church and hospital are also given.

Mediæval London. By Rev. CANON BENHAM, F.S.A., and CHARLES WELCH, F.S.A. London: Seeley & Co., Ltd. 1901.

THE book with this attractive title is the latest addition to the series of "Monographs on Artistic Subjects" published from time to time by Messrs. Seeley. The names of the authors

are in themselves a guarantee that the work is well done, and in the comparatively small space of less than eighty pages a great mass of interesting facts and material has been brought together dealing with the buildings and people, and their manners and customs, privileges and pageants, and the innumerable points of interest in the life of London from the time of the Conqueror to the days of the Stuarts, the beginning of which latter period has been taken as the starting-point of the gradual transition from the mediæval to the modern city. The book is divided into six chapters, the first being a general survey of the city during period covered by the "Monograph," with lists of the principal buildings, ecclesiastical and civil. The succeeding four chapters deal in turn with the civic life of the city, the Guildhall, and the historic scenes and pageants of which it has been the centre; the Thames, and the old bridge, with its chapel and houses; the religious life of London, which in its turn was centred in the great cathedral, and around which were the numerous fine ecclesiastical buildings of the City churches and monastic foundations; and lastly a chapter devoted to the fortress, palaces, and mansions, the Tower, the great houses at Westminster and Greenwich, Baynard's Castle, the Savoy, and the Bridewell, and the houses of the nobility that in this and later times stretched along the banks of the Thames westward of the Temple. A final chapter describes the transition period, which may be said to have begun with the Stuart dynasty, and which was further marked by the Great Fire of 1666, the catastrophe that, perhaps, above all others, caused the changes out of which has grown the great Metropolis of to-day.

The book is excellently illustrated with reproductions in colours from MSS., the panoramic view of London by Antonie van den Wyngaerde, and views of the Palace of Greenwich, and a series of reproductions from drawings by J. Wykeham Archer, made in 1841 and the following year, of many bits of mediæval London, some now unfortunately destroyed. Every page of this work bears evidence of the care and ability of the authors, and it will be of value to all who take an interest in the history of the gradual rise of London and the changes through which it passed.

The Chemistry of Paints and Painting. By A. H. CHURCH, F.R.S., M.A., D.Sc. Third Edition. London: Seeley & Co. 1901.

THE first edition of this work appeared in the year 1890, and the fact that the book has already reached a third edition is sufficient evidence that it has been found of value. It may be well to mention that the book refers mainly to the materials used by artists, and not to house painting, although it is not devoid of information which even a house painter might assimilate with advantage.

The subject of the book has not hitherto received that general attention which is merited by its importance, but its treatment could not have been entrusted to an abler hand than that of Professor Church, who is at once an eminent chemist in touch with the most notable artists of the day, and an indefatigable investigator into the causes of the deplorable changes which have been wrought by time in the priceless works of hands long since still.

With regard to the utility of a knowledge of chemistry to artists, the following passage which occurs in the preface is of interest:—

"'Titian managed pretty well without chemistry, did he not'? A distinguished artist asked me this question the other day. But not only were the conditions under which the painters of Titian's time worked simpler than those of the nineteenth century, but grounds, paints, oils, and varnishes were generally prepared in the studios of the artists, and under their own superintendence, so that the chances of going wrong were comparatively limited. And it is not to be denied that a better acquaintance with the nature of the materials which many of the old masters employed would have caused their works to be handed down in sounder preservation to future generations."

In the introduction Professor Church points out that

"Nowadays it is very seldom that a painter prepares for himself any one of the materials which he uses, generally accepting, without much hesitation and without examination, the paper, the canvas, the paints, the oils, and the varnishes which his colourman supplies, provided they respond at first sight to his requirements. . . . . He may go so far as to reject chromate of lead, but he still employs the pigment called chrome green, or green cinnabar, for he does not know that the same chromate of lead enters largely into its composition; and he still thinks that madder yellow is a sound paint, because it is called madder, while he rejects the yellow lakes, which are derived from the same source."

The book is divided into four parts. Part I. deals with the various painting grounds such as paper, vellum, ivory, plaster, panels, stone, and canvas. Part II. discusses the vehicles and varnishes. Part III. is devoted to pigments, and Part IV. to painting methods, the study and conservation of old paintings and water-colour drawings, and a discussion of the trials made by various authorities regarding the durability of pigments.

We strongly recommend the book to those interested in the making of pictures intended to be permanent, and to those concerned in the construction of picture galleries.

Bricklaying and Brickcutting. By H. W. RICHARDS. London: Longmans, Green, & Co. 1901.

THIS is a new work, written by the head of the Building Trades Department of the Northern (London) Polytechnic Institute, and is on the whole creditable both to author and publisher. The page is of a good and convenient size, and the type also; the illustrations are clear and plentiful. The author has a good knowledge of his subject, and spares no pains to make his meaning clear to beginners.

The work consists of three main parts, dealing respectively with brickwork in general; arches, gauged work, and special details; and the materials employed in making and setting bricks. There are also appendices, including a description of the London practice in measuring brickwork, a short model specification, a glossary, and, of course, the inevitable examination papers.

We suppose it is the influence of these examination papers which leads to the waste of so much space in what is pre-eminently intended for a practical work, besides what is much worse, to such an appalling waste of students' time, over the really useless subject of "single Flemish bond" and "double Flemish bond." All this only mystifies the beginner, and as every bit of brickwork that can conceivably be needed in any kind of building can be better done—in every sense of the word—in English bond, why should examiners insist on keeping up this system of Chinese puzzles? The space and the time would be far better occupied in the consideration of some much-needed improvements in English bond, which, though the best form of brickwork at present used in this country, is by no means perfect yet.

We shall never get the perfection of brickwork, perfectly sound throughout and perfectly satisfactory to the eye, till we get rid of those weakening and weak-looking scraps called "closers" and substitute three-quarter bats in all our piers and quoins. Closers look neat and pretty enough, as drawn on plan in tidy diagrams, but do these professors of theoretical brickwork ever look at the inside of a broken-down pier or wall and see the rubbish of three-cornered chips which runs right through the work just where it ought to be strongest? Experiments in crushing piers have demonstrated (as any one could have easily foretold) that the line of closers is the first line of fracture in a pier; but our teachers of brickwork still ignore it. But what also wants driving home to them is this: There is a sound maxim that what is mechanically right, looks right, and this is most markedly the case if the artistic effect of work built with and without closers be compared, particularly in such instances as the face of a narrow buttress or pier, where on the closer system each alternate course looks made up of fragments. The reason of the more satisfying appearance of English bond with three-quarter bats (or, as it is sometimes called, "Dutch" bond) is probably this, that (except occasionally in a re-entering angle, where it is little noticed) every brick seen *is wider than its own height, i.e.*, nothing is less than 4½ in. by 3 in. This gives a comfortable expression of stability to the whole work, the effect of which is quite destroyed by the sticking in (they never look really "laid") all along the angles of a number of upright slips with a width of about 2 in.

We cannot agree with Mr. Richards in his slighting description of plinths. "The plinth," he says, "is an architectural feature only in the building, and is frequently a source of weakness. The slight projection, often only 2¼ in. or under, does not conduce to good bonding, and leads to bad workmanship." He then gives "a section showing the best treatment of a plinth projecting 2¼ in." This section is certainly not satisfactory, as it shows a 14-in. wall thickened out by closers right down to the footings. The bricklayer may occasionally have to work to such a design, but in an ideal example the wall should have been arranged with a 2¼-in. offset on the inside corresponding with the plinth, thus forming an 18-in. wall thence downwards. This is of course supposing that circumstances limited the outside projection to 2¼ in. only, though we should say that in almost every case a building of any architectural pretensions should be given a plinth of 4½ in. projection at least. Such a plinth is not an extravagant luxury, but rather a necessity, and makes an incalculable difference in the expression of a building. A timid plinth at once suggests a feeble designer. There may be instances, as when the whole wall is strongly battered, where plinths may be dispensed with; but for the large majority of buildings the plinth is an essential feature of the first importance.

The following sentence calls for an emphatic protest:—"There are several other fancy-coloured mortars, such as pink, chocolate, &c., the object being to make a contrast between the brick and the joint. Thus a deep chocolate *blends well* with red facings, &c. (the italics are ours); but being too numerous to deal with individually, the colouring must be left to the judgment of the practical man." What an appalling prospect in store for people with eyes! Cannot builders of all grades realise that such tampering with the joints is absolutely destructive of the artistic value of a plain building, and exceedingly detrimental to that of an elaborate one? For, try what they will, every departure from the natural colour of good lime-and-sand mortar (and the tints it gains by weathering) only makes for vulgarity and ugliness.

Several sections might very well be made fuller, and Mr. Richards refers to treating certain subjects "in some future work." We hope, however, that it may not be long before he will be able to bring out a revised edition of the present one, since, with a moderate amount of correction and enlargement, it might bid fair to be reckoned a standard treatise. The subjects of brick-vaulting, which is not touched on, of chimney-stacks and caps, which is only very slightly dealt with (though we are glad to endorse the sensible recommendation, "it is far preferable to have 9-in. outside work to chimney-stacks to keep out both the rain and the cold, which retard the even flow of the smoke"; this really ought to be the rule, instead of, as at present, the exception), and of buttresses (which word does not even occur in the index), may all be commended to Mr. Richards' notice when preparing his new edition.

Bricklaying. By OWEN B. MAGINNIS. New York: Published by the Author.

THE title-page of this work reminds one of a seventeenth-century one in its prolixity, but a transcription of part of it will give the best possible idea of the nature of the work itself:—"'Bricklaying.' By Owen B. Maginnis. This book contains extensive detailed explanations of the most approved modern methods of 'bricklaying,' as applied at the beginning of the twentieth century. The information has been obtained directly from the work during construction, and is the current practice and experience of the best authorities, supplemented by chapters on 'Shoring,' 'Needling,' and 'Underpinning.' The whole making an invaluable book of reference for architects engineers, contractors, builders, and mechanics Illustrated by over 200 engravings with full descriptive text," &c.

These large promises have been fairly fulfilled, and the author has succeeded, with the aid of double columns and small print, in compressing a surprising amount of really practical instruction into a volume of quite moderate compass. The illustrations are rough and unpretentious, but always clear and to the point. A good deal in the book would appear strange to the English student, when one reads, for instance, that "the usual average size of a common brick is 8 in. long, 3½ in. wide, and 2 in. to 2¼ in. thick;" that "a good brick dry weighs from 3¼ lbs. to 3¾ lbs.;" or that all "lammies" should be rejected.

takes a little time to get used to the descriptions of 12-in., 16-in., 20-in., and 24-in. walls; and "clips," "Chicago bond," and "Rosendale cement" have all an unfamiliar sound; but for all that there is much information in the book which is sound and profitable as well as novel. Most of our English instructors of brickwork might study this book with advantage, if they would only carry away from it and apply the lesson that we English are not infallible, even in such an apparently simple matter as the best methods of using bricks.

The Practical Engineer Pocket-Book for 1902. Technical Publishing Co., Ltd., Manchester.

THIS useful notebook, which has now reached its fourteenth edition, includes a good number of additional tables, and special attention has been devoted to the section dealing with gas-engines. Amongst other new features now introduced, we may mention the sections relative to Mond gas, mechanical refrigeration, and the photo-copying of drawings. A subject that is very briefly and incompletely treated is that of lifts. Lifting machinery certainly finds a place in the index, but nothing is found about lifts when the page is turned up. Hydraulic lifts are also indexed, but next to no information is given concerning them, while electric lifts are not even mentioned. In commending these points to the consideration of the publishers, we make the further suggestion that the index ought to be placed where it can readily be found. This constantly-required detail is now hidden away right in the middle of the fifty-one pages of advertisements with which the book commences—a most annoying arrangement to regular users of an otherwise excellent publication.

"The Practical Engineer" Electrical Pocket-Book for 1902. Manchester: The Technical Publishing Co., Ltd.

THE third annual edition of this cheap and useful pocket-book contains several important additions which materially add to its value. The increasing importance of dust destructors in connexion with electrical power generation has led to the introduction of a new section devoted to this branch of engineering. We are sorry that a frustum of a cone is called a "frustrum," as this will help to perpetuate a very common mistake.

BOOKS RECEIVED.

ARCHITECTURAL ENGINEERING. By T. Kendall Freitag, C.E. Second Edition, rewritten. (Chapman & Hall.)

LOCKWOOD'S BUILDERS' AND CONTRACTORS' PRICE BOOK, 1902. Edited by F. T. W. Miller, A.R.I.B.A. (Crosby Lockwood & Son).

PETER VISCHER ("Great Craftsmen" series). By Cecil Headlam. (Geo. Bell & Sons. 5s.)

ELECTRICAL STANDARDISING TRAINING INSTITUTION.—As the result of the recent scholarship examination, the Board of Control of the above Institution have made the following awards:—To Alfred Thomas Morris, of Bedford Modern School, a Maxwell scholarship, value fifty guineas, tenable for two years; to William Leighton Chubb, of Dunheved College, Launceston, an exhibition, value thirty guineas, tenable for two years; to Alban Cecil Whish, of Hillmartin College, an exhibition, value twenty guineas, tenable for two years; to Herbert William Swann, a special prize of fifteen guineas; to Eustace Blackburne Ritson, of Shrewsbury Public School, a special prize of ten guineas.

RAILWAY TUNNELS AND THE LONDON PARKS AND GARDENS.—Some of the measures for the construction of tube-railways in London that have been prepared for the current Session of Parliament embody projects for making tunnels beneath three of the parks and the Victoria Embankment-gardens. The proposed line of the Charing Cross, Hammersmith, and District Electric Railway is planned to pass beneath the southern steps of the Albert Memorial in Kensington Gardens, and beneath Hyde and Green Parks. Two schemes framed by the London United Electric Railway Co. contemplate an interference with Victoria Embankment-gardens; St. James's Park, near Buckingham Palace; Green Park, along the entire side of Constitution Hill; and Hyde Park, along the south side and across the middle of the eastern portion. The tunnels would be made at depths varying from 70 ft. to 80 ft., and in one instance of 100 ft., respectively, beneath the surface, and their projected construction is viewed with considerable alarm by those who are anxious for the security of open spaces in London, and the preservation of their natural beauties.

Correspondence.

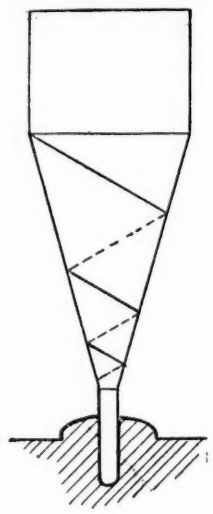
THE IONIC VOLUTE AND THE NIKÈ APTEROS CAPITAL.

SIR,—Referring to your report of Dr. Murray's paper, may I say that twenty years ago I arrived at the conclusion that the British Museum capital probably belonged to the Temple of Nikè Apteros.

What led me to this conclusion was the presence of a small hole in the centre of the eye of the volute, which can be seen both in photographs of the temple and also in the drawing of the capital in Inwood's Erechtheion (plate 23).

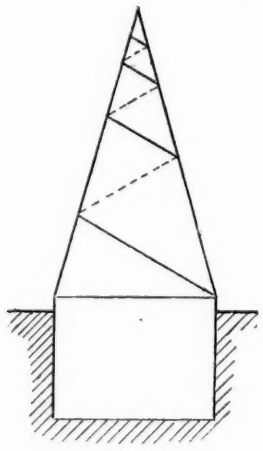
Let me explain why I attach so much importance to this small hole.

I had been commissioned to make a small copy of the Nikè Apteros Temple. I made the drawing



NIKE APTEROS

for the capital by Goldman's method, but I knew that no Greek would ever have allowed so crippled a curve in his work, and I therefore sought a better way. It struck me that I might use a cone for the purpose by winding a string round it, fastening a pencil to the loose end of the string, and then unwinding it; and having made my instrument, I got a very good spiral from it. I fixed my cone point downwards by a stout pin into the drawing-board, so stout that I could not draw the inner revolution. It then occurred to me to fix it point upwards, by which means I could use the cone up to the point, and this plan answered perfectly. I then saw that the large holes in the



MINERVA PRIENE

centre of the old Greek volutes would just hold my cone, and, having made one to fit the Priene example, I obtained an interview with the late Sir Charles (then Professor) Newton, placed the cone in the hole of the volute, the pencil in his hand, and asked him to unwind the string, which he did, describing, much to his astonishment and interest, the line of the spiral.

I afterwards came to the conclusion that I could as well use the cone point downwards by having a small pin on the end and a small hole to receive it, steadying the cone at the top. Imagine my delight at finding the identical small hole in Inwood's drawing and in the photographs of the Temple of Nikè Apteros, and I made my capital from his drawing and by using, I believe, an instrument identical with that used by the ancient Greeks to make its progenitor.

Now may I generalise from my experiences—discoveries if you will.

We find four different centres in these old volutes.

1. The shallow hole in the fragment from Mycenæ and in the Parthenon antefix.

2. The deep hole in the Minerva Priene, the Mausoleum, and many others.

3. The small hole in Nikè Apteros. I know of no other example.

4. No hole in the Erechtheion.

There are also archaic examples without holes or a centre eye.

The reasonable conclusion seems to me that they point to four different methods being used in the production of the volute. If the ancient examples were classified under these heads I believe it would help to determine their date.

But a far more interesting and important question is the evidence of the use of Greek drawing instruments. I do not hesitate to affirm that every form of Greek vases and ornaments (except, of course, the frets and volutes) took its rise in the curves produced by a revolving plane. We have evidence of the use of these same instruments by the Egyptians and Assyrians, but to enter on this question would make my letter too long.

I would only urge that attention should be given to the practical side, both of masonry and pottery, in determining origin and dates, and fortunately the ancients have left plenty of evidence for us on their works.

DANIEL WOOD.

THE DIRECT EMPLOYMENT OF LABOUR.

SIR,—Your readers may consider that Mr. Blashill's last letter does not lead one to suppose that his "arguments" on the above subject are in any way convincing, nor do I gather that his endeavours to make his views clear have met with much success.

I may say that what first called my attention to this subject was, when casually glancing through your columns, I noticed his statement that "the contractor may, if he likes, have his yard and workshops, his dead stock and live stock, his machinery and the clerical staff of a large manufacturing establishment. *But it is no more necessary than* it is for a joiner to have the old-fashioned box of tools;" and this led me to further peruse his letter as a whole. On this one point in particular Mr. Blashill has carefully avoided any further reference in his subsequent letters, and one must assume he can produce no arguments to satisfactorily explain such statement. If, however, he still adheres to it, one can only conclude that he has had very little experience of "what is necessary to enable a contractor to carry on his business successfully."

The "labour question," too (in connexion with the subject now under discussion), is quite a different matter to the "labour question" as Mr. Blashill would have us understand. Under the heading of this correspondence it resolves itself into a question, not of "wages and conditions of labour," but—"Would the workmen do as much work—or, in other words, work so cheaply—for a direct employer (private owner, &c.) as they would under the superintendence of an experienced builder?" assuming that equal conditions prevail. I maintain decidedly not.

Mr. Blashill has, unfortunately, departed from the main issues as applying to this correspondence, and it is useless, therefore, continuing the discussion on such lines, as confusion would result.

I may say, in conclusion, one of my "experiences" of direct employment was being called in (as a surveyor) to endeavour to elucidate the mystery of "Where has the money gone?" in a case where a firm of large manufacturers had been induced, by the advice of their architect, to build for themselves. That gentleman regretted he had given such advice ever after; he lost his clients in this case, and many others, as a consequence.

GEORGE H. CHAPPELL.

LIVERPOOL CATHEDRAL.

SIR,—As Mr. Shallcross considers that my letter "excellently supports the Petition Committee's opposition to the selected site," I should have thought he might have let the matter rest as far as I am concerned, and not have troubled you and me with his eleven rather laboured questions. Happily, they are pretty easily answered, and my replies will not take up very much of your space. I must deal with them numerically:—

1. I know nothing of Archdeacon Madden's speech. It would be a pity not to reserve the power of placing some further buildings on the vacant part of the site. Room for such buildings could no doubt be also got near the Monument site, at a price!

2. The cathedral, if built on the Monument site, would, I believe, be much nearer to the lines of traffic than St. George's Hall is.

3. It was the fact of the Monument site being "surrounded by electric tram lines" that I referred to.

4. This question seems to answer itself.

5. I have already expressed my opinion on this point, and need not repeat it. The later clauses of this question really do not need replying to.

6. In this question Mr. Shallcross shows that he has not given much study to the St. James's Mount site. The cemetery does not drop "40 or 50 ft." immediately beyond the boundary of the site.

There is first a belt of cemetery ground some 30ft. wide nearly level with the site; beyond this there is a terrace wall with a drop of about 6 ft., and then a path, perhaps 15 ft. wide—the rapid fall into the cemetery proper only beginning beyond this patb. These are the "upper terraces" I referred to. The Cathedral Committee should certainly obtain power to build over them, the path being arched over if need be.

7. I merely suggested the question whether Liverpool was not big enough to possess more than one centre of architectural interest. I do not presume to decide the point. I really cannot discuss the position of the British Museum.

8. A district of solid shop property is hardly likely to change its character materially.

9. Wild horses should not tear from me the name of the person in question! I said in my letter that the day was a cold one, and that the average attendance was probably greater.

10 and 11. This is a serious matter. I had not heard the results of the test holes, but I saw the soil which had been dug up, which was evidently quarry waste. Opposite the chaplain's house, however, the native rock may be seen, which looks as if it would be reached at no very great depth. It is entirely a matter of money. In a large church I am now engaged on all the principal piers, &c., have had to be carried down from 20 ft. to 30 ft. to reach solid soil. If the depth shown by the test holes applies to the site generally, the additional cost will certainly be severe.

I hope Mr. Shallcross will not think I have treated his questions inadequately, but in any case I sincerely trust he will not ask me any more.

J. OLDRID SCOTT.

PORTABLE WOODEN DWELLING-HOUSES.

SIR,—I shall be obliged if you can give me the address of any firm in Great Britain who make portable wooden dwelling-houses.

A client of mine requires one of four rooms to be sent to Rio Janeiro (S. America) by boat, in pieces ready fitted together. FRED. E. DOTCHIN.

The Student's Column.

DRAINAGE AND PRIVATE SEWAGE-DISPOSAL.

CHAPTER 3.—THE LAW IN ENGLAND AND WALES, EXCEPT LONDON *(continued)*.

MANY Local Authorities are now committed to the separate system of sewerage—that is to say, two sewers are provided, one for rainwater and, perhaps, subsoil-water, and the other for sewage, including also some portion of the rainfall. This involves, of course, separate drains, and the question arises whether a Local Authority can compel a building owner to provide these two sets of conduits. According to Matthews *v.* Strachan, which was a case stated by justices for the opinion of the High Court, the Local Authority has no such power. The case was heard before Mr. Justice Ridley and Mr. Justice Bigham in the King's Bench Division on June 20, 1901. The appellant Matthews had deposited with the Harrow Urban District Council the plans of a house which he proposed to erect in Lyon-road, Harrow. On these plans one set only of drains was shown.

The Council's Surveyor reported that one 4-in. sewage drain must be laid and connected to the Council's sewage sewer, and that one 4-in. surface-water drain must be laid and connected to the Council's surface-water sewer. The Council passed a resolution approving the appellant's plans, subject to the requirements contained in the Surveyor's report as to the drainage being carried out. The appellant, however, laid only one drain in accordance with the deposited plans. The magistrates gave a verdict in favour of the Council, but the High Court decided that the justices were wrong. It was held that "Section 25 of the Act empowered the Local Authority to take into consideration certain matters, and only certain matters, for the purpose of satisfying themselves whether the drain proposed was effectual for draining the house—viz., the size, material, level, and fall. If matters beyond the requirements of the section were asked for, it was in effect asking the owner of the house to subscribe to a general system of drainage. That was not the intention of the Act. The decision of the justices must be reversed."*

The *Law Journal*, commenting on this case, says that it is doubtful whether a Local Authority can validly make any by-laws to get over the effect of this decision. If this view is correct (and we see no occasion for doubting it), a serious blow has been struck at the separate system of sewarage. A new Act of Parliament will be required, or the Local Authority must pay for the extra drain.

This decision would also seem to call in question the Local Authority's power to compel a person laying out a new street to provide two sewers, one for sewage and the other for surface-water. Many Local Authorities decline to approve the plans and sections of new building estates unless the two sets of conduits are shown; they may be within their rights, but we all know that public bodies have a bad habit of going beyond the law, as very few persons are able or willing to oppose their arbitrary acts.

As an example of this habit of Local Authorities or their officials, we may mention the case of a town the surveyor of which recommended that the owner of every drain should be compelled to lay a ventilation drain, from that portion of his sewage drain which intervenes between the intercepting trap and the sewer, to his building, and to carry a ventilation shaft up the wall of the building from the ventilation drain; in other words, that private individuals should be compelled to provide the means of ventilating the public sewers, although by Section 19 of the Act the duty of ventilating such sewers is explicitly laid on the Local Authority.

We pass now to Section 41, which throws upon the owner or occupier of premises the responsibility of maintaining the drains, cesspools, &c., on or belonging to such premises in such a condition as not to be "a nuisance or injurious to health," and empowers the Local Authority's "surveyor or inspector of nuisances, after twenty-four hours' written notice to the occupier of such premises, or in case of emergency without notice, to enter such premises, with or without assistants, and cause the ground to be opened, and examine such drain . . . . or cesspool." If the drain or cesspool is found to be in good condition, the damages must be made good by the Authority, but "if the drain . . . . or cesspool on examination appear to be in bad condition or to require alteration or amendment," the Local Authority may give notice in writing to the owner or occupier, requiring him to do the necessary works within a certain time, the penalty for default being 10s. a day; in case of non-compliance, the Authority may do the work and recover the expenses from the owner (not occupier), or declare them to be private improvement expenses. Note that if the drain or cesspool is either a nuisance or injurious to health, the section can be put in operation. By Section 306 the owner of any premises on being prevented by the occupier from "obeying or carrying into effect any provisions of this Act" can obtain from any justice a written order requiring the occupier to give the necessary permission within twenty-four hours, the penalty for non-compliance not to exceed five pounds per day.

5. *Sewage Disposal.*—We have seen that the owner or occupier of a "house" has the right of connecting the drains from that "house" to the public sewers of his own or neighbouring Local Authority, and that he can be compelled to make such a connexion provided that there is a public sewer not more than 100 ft. from the site of such house. If there is no public sewer within this distance, the drain must (according to Sections 23 and 25) empty "into such covered cesspool or other place, not being under any house, as the Local Authority direct."

It need scarcely be said that the method of disposal must be neither a nuisance nor injurious to health (Section 41, already quoted), and that it is unlawful to turn sewage into rivers, although Local Authorities, being great sinners themselves in this respect, often wink at such pollution. The Local Authority may decide whether a covered cesspool or some "other place" shall be used for the reception of the sewage.

Urban and Rural Authorities, after adopting Part III. of the Public Health Act Amendment Act, 1890, may (under Section 23) make by-laws with regard to cesspools, &c., "so as to affect buildings erected before the times mentioned" in Section 157 of the Act of 1875. By-laws made to this effect were contested in the case of Simmons *v.* Malling Rural District Council (1897, 2 Q.B., 433). Simmons was the owner of an old public-house, which was formerly drained into two cesspools. In October, 1896, in consequence of a notice from the Inspector of Nuisances, he filled up the two cesspools, and afterwards constructed another within a distance of 17 ft. from the buildings, and connected the drains to this new cesspool. One of the by-laws of the Council specified that every new cesspool must be constructed "at the distance of 50 ft. at least from a dwelling-house." It was held that the by-law applied, although the building was an old building, and that it was not *ultra vires* or unreasonable, and was therefore valid.

By Section 24 of the Public Health Acts Amendment Act, 1890, a penalty not exceeding 2*l.*, and a daily penalty not exceeding 10s., can be enforced against any person who occupies, and any person who suffers to be occupied, any room a portion of which extends over any privy, cesspool, midden, or ashpit, whether the room was built before or after the adoption of Part III. of the Act.

6. *By-laws and Regulations.*—By-laws may be made by Local Authorities (both urban and rural) imposing the duty of cleansing cesspools "at such intervals as they think fit" on the occupier of any premises (Section 44), for enforcing the drainage of houses let in lodgings (Section 90), and for other purposes. Urban Authorities may also make by-laws with respect to the sewerage of "new streets" (Section 157), and the same power can be obtained by Rural Authorities (for the whole or part of their districts) on application to the Local Government Board.

We have also seen that regulations may be made by Local Authorities under Section 21 in respect of the mode in which the communications between drains and sewers are to be made, under Sections 23 and 25 (although the word "regulations" is not here used) in respect of the size, materials, level, and fall of drains, and under Section 40 in respect of the construction and maintenance of cesspools.

Section 23 of the Public Health Acts Amendment Act, 1890, extends the powers of making by-laws, and specifies that by-laws made with regard to the drainage of buildings and to water-closets, earth-closets, privies, ashpits and cesspools, &c., may be made so as to affect old as well as new buildings.

By-laws made by a Local Authority under the Public Health Act do not take effect until they have been confirmed by the Local Government Board. Regulations, on the other hand, are at the entire discretion of the Local Authority, provided, of course, that they do not exceed the limits imposed by Act of Parliament.

The by-laws of different districts vary in many important particulars. In some cases by-laws framed more than thirty years ago are still in operation, but modern urban by-laws invariably follow pretty closely the "Model By-laws" issued by the Local Government Board. These will be considered in Part II., together with the model by-laws which have recently been issued for rural districts.

LONDON (EXCLUSIVE OF THE "CITY").

1. *Drains and Sewers.*—In the Metropolis the principal provisions regarding drains and sewers are to be found in the Metropolis Management Act, 1855. In the main the Vestries and District Boards (now superseded by the Borough Councils or Corporations) are invested with powers regarding sewers and drains similar to those conferred on provincial Local Authorities by the Public Health Act, 1875. The word "drain" is, however, defined so as to include "any drain for draining any group or block of houses by a combined operation under the order of any Vestry or District Board." This point will be briefly considered under the head of "Combined Drainage."

By Section 69 those sewers which are vested in the Vestries or District Boards must be repaired and maintained by them, and the Vestries or District Boards are made responsible for the construction, repair, and maintenance of such sewers as may be necessary for effectually draining their parishes or districts. The next section empowers the Vestry or District Board to alter or improve

* A fuller report of this important case will be found in the *R.I.B.A. Journal* for July 27, 1901.

sewers, &c., for the maintenance or repair of which "any party" is liable, and to divide the expense between such party and the parish or district and others. Section 72 imposes on the Vestries or District Boards the duty of causing the sewers vested in them to be constructed, covered, and kept so as not to be a nuisance or injurious to health, and to be properly cleansed and emptied.

2. *Combined Drains.*—The definition of the word "drain" given in the Metropolis Management Act, 1855, is almost word for word like that subsequently adopted in the Public Health Act, 1875, but in the Metropolitan Act the following words are added :—"And shall also include any drain for draining any group or block of houses by a combined operation under the order of any Vestry or District Board." By the Metropolis Management Amendment Act, 1862 (Section 112), the following clause was added to this definition :—"And also any drain for draining a group or block of houses by a combined operation, laid or constructed before the first day of January, 1856, pursuant to the order or direction, or with the sanction or approval, of the Metropolitan Commissioners of Sewers." Here we have a definition of what is meant by a combined drain in the Metropolis.

The powers of Vestries and District Boards with regard to combined drains are stated in Section 74 :—"If it appear to the Vestry or Board of any parish or district that a group or block of contiguous houses, or of adjacent detached or semi-detached houses, may be drained and improved more economically or advantageously in combination than separately, and a sewer of sufficient size already exist or be about to be constructed within 100 ft. of any part of such group or block of houses, whether contiguous, detached, or semi-detached, it shall be lawful for such Board or Vestry to order that such group or block of houses be drained and improved, as hereinbefore provided, by a combined operation."

Under this section the Public Authority can compel the owner of a building which is more than 100 ft. from a sewer to convey the sewage from the building to this sewer, if an adjacent building which is less than 100 ft. from the sewer can be drained with it by a combined operation.

GENERAL BUILDING NEWS.

NEW VESTRY, STOKE BISHOP CHURCH.—A new vestry has been added to Stoke Bishop Church, near Bristol. The nave has also been repaved with terrazzo mosaic by the Art Pavements Co., London, and the sanctuary with encaustic tiles by Messrs. Godwin, of Hereford. The chancel steps have been re-arranged, together with other improvements. The church has also been re-heated by Messrs. Crispin, of Bristol. The work has been carried out by Messrs. Cowlin & Sons, Bristol, from the designs and under the superintendence of Mr. C. Aubrey Rowley, of Bristol, with Mr. John Norton, of London (who built the church in 1864 and added the tower and spire in 1872) as consulting architect.

CONGREGATIONAL CHURCH, HARRINGAY.—A new Congregational church was opened on the 9th inst. at Green-lanes, Harringay. The church consists of nave and aisles, with an apse at the end, and double transept. Red brick and Monk's Park stone have been used in the erection of the building, the architect of which is Mr. Church.

WESLEYAN CHAPEL, OSMASTON, DERBYSHIRE.—On the 8th inst. a new Wesleyan chapel was opened at Osmaston-by-Derby. The building consists of bricks with Derbyshire stone embellishment, and will afford accommodation for 560 persons. The total cost will be about 3,000*l.* The architect is Mr. John Wills, of Derby and London, and the builder Mr. W. Edwards, of Derby.

ADDITIONS, ST. MICHAEL'S CHURCH, NOTTINGHAM.—The addition of a choir vestry, north porch and tower, to the Church of St. Michael and All Angels, Nottingham, is now approaching completion. The new vestry is a semi-octagon or irregular form, and the porch is in Gothic style, the gable being ornamented with open-work carving. The tower will be carried, for the present, to a height of 44 ft., but the ultimate intention, when the funds permit, is to construct a tower of much greater height, with proper belfry accommodation. The outside measurement of the north frontage of the tower is 20 ft., and the walls are 4 ft. thick, supported by buttresses 4 ft. by 4 ft. 6 in. at the base, diminishing to 3 ft. 6 in. by 3 ft. The masonry is of rock-faced Bulwell stone, with Bath stone dressings. The architects are Messrs. Habershon, Fawckner, & Groves, of Cardiff and Newport; and the general contractor is Mr. J. Shaw, Nottingham, by whom sub-contracts have been entrusted to Messrs. Wilkinson & Son, Bulwell, for the Bulwell stonework, and to Mr. Clarke Lenton, for the Bath dressings.

CHURCH, COTTERIDGE, KING'S NORTON.—The Building Committee have approved of the designs of Messrs. Cossins, Peacock, & Bewlay for the erection of a church at Cotteridge. The church is estimated to cost 9,000*l.*

SCHOOLS, WESTBURY-ON-TRYM, GLOUCESTERSHIRE.—New school premises have been erected at Westbury-on-Trym. The architect for the new buildings was Mr. F. Barnes, and the builders were Messrs. Harris & Co.

SCHOOL, DUNFERMLINE.—A new school has been erected at St. Leonard's-place, Dunfermline. The building, which has been erected in accordance with plans prepared by Mr. D. Barclay, architect, Glasgow, has cost between 7,000*l.* and 8,000*l.*

SCHOOLS, SUTTON COLDFIELD.—On the 8th inst. the schools which have been in course of erection in connexion with the Congregational Church, Sutton Coldfield, were formally opened. The new schools have been erected by Messrs. W. Lee & Son, of Aston, from the plans of Mr. Harry H. Reynolds, architect, Birmingham and Sutton Coldfield, at a cost of 2,500*l.*, and will afford accommodation for 350 scholars.

ADDITIONS, NEWINGTON WORKHOUSE.—A new wing has been erected at Newington Workhouse, Westmoreland-road. The addition has been built by Mr. John Marsland, of Walworth, from the designs of Mr. G. D. Stevenson, Cheapside.

ISOLATION HOSPITAL, CHAPEL MILTON, DERBYSHIRE.—There has been erected a large block of buildings at Chapel Milton, near Chapel-en-le-Frith, for the purposes of an infectious diseases isolation hospital. Mr. W. R. Bryden is the architect.

WORKSOP AND DISTRICT ISOLATION HOSPITAL SCHEME.—A meeting of the Worksop and Blyth and Cuckney District Joint Isolation Hospital Committee was held at the Town Hall, Worksop, recently, when Mr. F. Hopkinson, the architect, presented the building plans and the estimates of the proposed isolation hospital, and after discussion upon details the plans were ultimately approved, and it was resolved to apply to the Local Government Board for permission to borrow 6,000*l.* to carry out the scheme.

BUILDING IN ABERDEEN.—What was known as the "building boom" culminated in 1898, when 747 plans of buildings were sanctioned by the Aberdeen Town Council, of the total estimated value of over 514,000*l.* This was the highest level ever reached in the long history of the city, and it was felt at the time, that in the nature of things a continuance of such a fever heat of building operations could not be looked for. . . . But while it was impossible to expect annual additions to the gross value of buildings to the extent of half a million sterling, there was every reason to believe that with the increase of population, the addition of new industries, and the development and extension of existing businesses, there would be a renewal of activity in the building trade, and the figures for the complete year from December, 1900, to November, 1901, show that the expectation was well founded. Possibly the rise in the value of material, coupled with the over-erection of dwelling-houses, was a factor in checking operations; but the figures as now made up seem to point to the fact that the tide has reached its lowest ebb and has begun slowly to return. For example, for the twelve months which closed on November 30 last, the number of plans of new buildings of all kinds sanctioned by Aberdeen Town Council and by the Burgh Surveyor was 501, as against 499 for the previous year. In number this does not seem at first sight an increase worth stating, but when the value of the buildings themselves comes to be considered the facts strike one as satisfactory for the present. The total estimated value of the buildings sanctioned during the year amounted to no less than 328,760*l.*, as against 299,544*l.* the preceding years which gives an increase of 29,216*l.* It is no matter of regret that there were fewer dwelling-house, sanctioned than the previous year, because the number of these was too large; and it is rather satisfactory than otherwise, that there is a very substantial addition to the figures applicable to public buildings. Taking all things into account, the past year, while exhibiting no startling developments, has been marked by quiet, steady work of a healthy character, indicating a fairly prosperous condition of affairs. Perhaps the word "normal" would fairly enough express the character of the year with regard to building.—*Aberdeen Journal.*

BUILDING IN GRIMSBY.—Taken on the whole, the building trade in 1901, though not particularly brisk, has been quite satisfactory. While there has been an absence of new and imposing structures, house property has continued to be erected in quantity and with rapidity. Naturally the high prices of materials have had, to some extent, a detrimental effect on building operations, yet a fair amount of work has been carried out. Of labour there was an adequate sufficiency, and no differences have arisen to mar the relations of men and masters. The earlier part of the year was busier than the closing part, and so far as house property is concerned, it will be remembered that prior to the lock-out there was scarcely a house to be had. Builders could not get them up quick enough, and property owners took advantage of the opportunity thus afforded of raising the rents. The past few months have witnessed a change, and there is more empty property now than has been the case for some time. According to official returns, there were 426 new houses completed during the year, and at present some 200 are in course of erection.—*Grimsby News.*

BUILDING IN HULL.—Many imposing buildings were erected in Hull during the year 1901. Indeed, the erection of fine buildings was an outstanding feature in connexion with the vastly-improved aspect the city assumed during that period. The number of plans passed by the Works Committee was equal to that of the previous year—which was one of the busiest in the history of the building industry in the port—and the character of the structures has seldom been equalled in any one year. The building trade was not so brisk in the small house class—that of the speculating or investing builder—and had it not been for the pulling down of a great amount of old property on sites required for the new streets and the reinstatement of premises required for business purposes, the trade would have been somewhat slack, despite the fact that prices as regards material had gone down considerably. The pulling down of old property and the opening of the new streets necessitated new properties, and consequently the trade became busy at once. The price for labour maintained its old position, and to a certain extent was the means of stopping the amount of capital which otherwise would have been invested in buildings. The old year closed, and the new one has opened upon a steady advance in the price of timber and other building materials, and this, no doubt, to a certain extent will check building so far as investment and speculation goes. The present year will in all probability be brisk, considering the large number of buildings which must be erected in the new streets—the erection of the Rowton Homes, the extension of the Hull Royal Infirmary, the opening of the new square between Waterworks-street and Carr-lane, and the erection of a public hall, a new central police-station, the new art school on the Anlaby-road, a new theatre in Charlotte-street, a new Catholic church in Spring-street, Catholic orphans' home, new churches at Wilmington, Dairycoates, and Albert-avenue; extension of the Town Hall; new central post office in Alfred Gelder-street; seventy-seven new artisans' dwellings; and, of course, the important business premises on the sites in King Edward-street and Jameson-street. Although nothing definite is known, it is expected, also, that substantial building will take place on account of the North-Eastern Railway Co.'s intentions with regard to the improvement of Paragon-street Station. Building has been particularly stagnant on the East side of the city, probably on account of the closing of Earle's Yard. It will be remembered that towards the latter end of 1901 the progress in the work of new buildings received a check on account of the strike of operative slaters, but the slating contractors coped with the difficulty by employing outside labour, so that the check, happily, was only a momentary one.—*Eastern Morning News.*

UNIVERSITY OF BIRMINGHAM.—At the second annual Court of Governors of the University of Birmingham, the report of the Council was read. With regard to the new buildings, a committee has been appointed and the plans approved of Messrs. Aston Webb and Ingress Bell for utilising the land presented by Lord Calthorpe. Considerable progress had already been made in the formation of a new road, to be called University-road, and the levelling of the site. It had been decided to erect in the first instance a University Hall of large dimensions (150 ft. by 75 ft.), and three departmental blocks, two on the west and one on the east side of the hall; the whole fronting to the arc of a semi-circle, the diameter of which was University-road (the new thoroughfare running from the railway into Edgbaston Park-road, and nearly parallel with Bristol-road). In those buildings it was proposed to install a complete engineering department, including mechanical engineering, civil engineering, and electrical engineering, which would occupy two blocks, while the third block would accommodate the new departments of mining and metallurgy. In another part of the ground would be built a power station, and also a forge and foundry, all three being connected with the engineering department.

Y.M.C.A. BUILDINGS, HEREFORD.—A two-story building is now in course of erection in St. Owen-street, Hereford, for the Young Men's Christian Association. It will be built of Hampton Park bricks and terra-cotta dressings, and will be Renaissance in style. It is being erected from plans prepared by Mr. W.W. Robinson, architect, Hereford. The assembly-room itself, which will be open to the roof, will measure 42 ft. by 22 ft., and will be heated by Shoreland grates, though provision has been made for hot water apparatus. It will have a wide entrance porch. On the ground floor there will also be a class-room and two ante-rooms. On the first floor there will be a room 28ft. by 14 ft. to be used as a reading-room. The builder is Mr. William Powell, Hereford.

BUILDINGS IN NEW-STREET, BIRMINGHAM.—The scheme for the erection of arcades connecting New-street with High-street and Union-street, now nearing completion, is to be followed by the erection of another block of buildings which will front upon New-street. The new arcades, the Midland and the City, will open out of New-street at some little

distance from each other, and the frontage between is to form the site of the projected block. Messrs. T. W. F. Newton & Cheatle have prepared designs for an erection which will be in keeping with that of the arcade entrance. The new buildings are to be finished by October next. They will contain four large shops, about one hundred offices, and five sets of warehouses at the back. The various floors will be served with an electric lift. The buildings, although not owned by the City Arcades Co. (Limited), will, in a sense, be part of the general scheme for developing that end of New-street which has been in progress for four years past.—*Birmingham Post.*

TALL CHIMNEY, BRADFORD.—On the 13th inst., at the new generating station which is being erected in Valley-road by the Electricity Committee of the Bradford Corporation, the last brick was laid of the new chimney which has just been erected. The chimney was designed by Messrs. Mawson & Hudson, architects; and was built by Messrs. C. Murgatroyd & Sons, contractors, under the supervision of Mr. N. A. Atkinson, clerk of works. The chimney is built of brick, and stands on a concrete base. The concrete is 39 ft. square by 11 ft. 8 in. thick. The base of the brickwork is octagonal in shape and 32 ft. across. At the ground level the chimney is circular in form, and is 29 ft. 4 in. diameter outside, and tapers to the top to 15 ft. 4 in. diameter outside. The chimney is 13 ft. diameter inside, and is parallel from bottom to top. The height is 204 ft. from the finished floor level, and the foundations extend 32 ft. below this.

GUARDIANS' BOARDROOM, WANDSWORTH.—The boardroom of the Wandsworth and Clapham Union Board of Guardians at the Union Offices, St. John's Hill, Wandsworth, was reoccupied on Thursday, the 9th inst., after undergoing enlargement and rearrangement during the last six months. A new committee-room and a connecting corridor have been built in connexion with the boardroom, the waiting-room enlarged, and the lavatory accommodation also re-arranged and enlarged. The boardroom and committee-room are fitted with an electric light installation. The dado and doors in the boardroom are in solid polished walnut wood, with plaster pilasters and detachable columns above the dado. The warming is effected by a large open fireplace, supplemented by hot-water radiators, and the ventilating by fresh-air inlets and two of Blackman's electric exhaust fans. The work has been carried out at a cost of about 2,700*l.* by Messrs. Wilson Bros. & Lamplough, builders, of Kensal Rise, from the designs and under the superintendence of Messrs. Lansdell & Harrison, architects, of London.

NEW HOSPITAL, SUTTON.—A new hospital was opened at Sutton recently. Mr. Cecil A. Sharp was the architect and Mr. J. B. Potter the builder, both of Sutton. The site is situate in Hill-road. The building has accommodation for twelve patients.

PUPIL TEACHERS' COLLEGE, LIVERPOOL.—On the 6th inst. the Bishop of Liverpool (Dr. Chavasse) dedicated the new Church Pupil Teachers' College, in Colquitt-street, which has been founded in memory of the late Canon E. H. M'Neile. The Liverpool and District Church School Managers' Union purchased last year the site of the building which used to be known as the Art Gallery of the Royal Institution, in Colquitt-street, the old premises being acquired at the same time. The old building, with certain necessary extensions, has, at a cost of about 8,000*l.*, since been partially reconstructed and adapted from plans prepared by Messrs. Pain & Charles Blease, architects. The college is externally of brick and stone, and is situate at the junction of Colquitt-street and Seel-street. On the ground floor there are two science classrooms, each capable of accommodating fifty students, a gymnasium, cloakrooms, principal's office, cycle store, &c. On the first floor there are two classrooms, each with accommodation for forty students, a library, and a lecture hall. Another classroom and a first-class laboratory occupy the second floor.

BUSINESS PREMISES, PERTH.—A new street is being formed in Perth between South-street and High-street, at the back of the City Hall, with cross street at right angles, to join South St. John's-place. The first block or feu has been taken for premises to be erected for Messrs. Stewart & Dick, wholesale provision merchants and commission agents. These have a frontage of about 55 ft. towards the main street, and extend 105 ft. towards the cross street. The whole work is to be carried out under the supervision of Mr. David Smart, architect. The following are the contractors for the work, viz.:—Mason work, Robert Brand & Son; joiner work, Hay & Sim; slater work, James Buchan & Son; plumber work, James MacLeish (all of Perth); and plaster work, Alexander M'Ritchie, Dundee; while the steel beams are to be provided by P. & W. MacLellan & Co., of Glasgow.

FLEET-STREET WIDENING.—With the sale by Messrs. Douglas Young & Co. on the 22nd inst. of the corner site adjoining the Old Bell, in Fleet-street, the important improvement at this end of the thoroughfare will be completed. The erection of modern buildings on these sites is removing all traces of the past in this most interesting part of Old London.

FOREIGN.

FRANCE.—The Government have commissioned from M. Joseph Blanc a cartoon for a tapestry which is to be executed at the Gobelins manufactory, and is intended as a decoration for the Paris Hôtel de Ville. It will represent the arms of the city of Paris with the Cross of the Legion of Honour, and a lion (symbolic of force) beneath.——The large hall at the Invalides, situated above the principal entrance, is being fitted up as a military museum.——The Equitable Insurance Co. of the United States is to open an architectural competition for the buildings to be erected for it in Paris. ——The late M. Rouyer has left by his will a fund for the foundation of an architectural prize in connexion with the Académie des Beaux-Arts.——There is talk of prolonging to Boulogne and St. Cloud the metropolitan railway line which at present ends at the Trocadéro.——A monument to the memory of Pasteur is to be erected in the small town of Marnes (Seine and Oise), the architectural portion by M. Jaumin, the sculpture by M. Chailloux.——The municipality of Rouen are about to erect a Bourse de Travail, at an estimated cost of 375,000 fr. ——M. Malençon is the architect selected to carry out the new hospital of St. Lo.——M. Woilles, architect, of Beauvais, has been elected president for this year of the District Society of Architects of the Oise; and M. Jouvenin, of Fontainebleau, president of the District Society of the Seine and Marne.——M. Moyaux, architect, has prepared the plans for the proposed additions to the Institut building, which are to replace the portions that will be destroyed by the prolongation of the Rue de Rennes. The new buildings will have a façade on the new portion of Rue de Rennes, and will be in the rear of the dome and aisles facing on the quay, which will remain intact.——There is talk of a new bridge over the Seine, between the Pont d'Ivry and the Port à l'Anglais.——A marble bust of Hittorff, the eminent architect and archæologist, has been placed in the Académie des Beaux-Arts.——M. Jules Doré, architect, has been commissioned to build new abattoirs for the town of Mortagne.——The immense bronze statue of Vercingetorix, by M. Bartholdi, which was exhibited in the Grand Palais last year, has been transported to Clermont-Ferrand by means of an automobile waggon, the railway company having refused it.——M. Delfortrie has been elected President of the Architectural Society of the North of France, and M. Santu President of the Architectural Union of Lyons.——M Nénot has been appointed architect to the Panthéon, in place of M. Deschault, who is superannuated; and M. Sortais has been appointed architect to the Ecole des Arts Decoratifs.——The Municipal Department of Architecture at Paris is about to take in hand the restoration of the church of St. Séverin.——The death is announced, at the age of fifty-five, of M. Felix Albert Marquet; and also that of M. Henry Carreaux, at the age of fifty-three. Both were architects, and members of the Société Centrale. M. Carreaux had been educated in the Pacard atelier.

INDIA.—The foundation-stone of the new Chief Court of Lower Burma has recently been laid by the Viceroy of India.——The Secretary of State has sanctioned the construction of a line of railway, 5 ft. 6 in. gauge, from Malakwal to the Karana Hills; the works will be under the control of the Director of Railway Construction.——It is announced that the proposed memorial hall to be erected in Singapore to Queen Victoria will adjoin the Town Hall, and be on the site now occupied by the temporary Supreme Court. The new building will be of similar design to the present Town Hall, but higher, the front façade of the latter being remodelled to harmonise with the former. A central tower, 150 ft. high in front, and an arcade in the centre will connect the two buildings. The cost is estimated approximately at a quarter of a million dollars.

MISCELLANEOUS.

YORK MASTER BUILDERS' AND CONTRACTORS' ASSOCIATION.—The annual meeting of the York Master Builders' and Contractors' Association was held recently at the old George Hotel, Pavement, the President (Councillor G. Mansfield) in the chair. The annual report, which showed a very satisfactory year's working, was read and adopted. Councillor Mansfield was re-elected President, and Mr. C. Prudames was re-elected Vice-president. The President (Councillor Mansfield) has been elected to the position of President of the Yorkshire Federation of Building Trades Employers. The best thanks of the Association were accorded to the President, vice-president, and treasurer for their services during the past year.

ELECTRIC LIGHT, WORKSOP.—On the 9th inst. Colonel Hepper, D.S.O., R.E., Inspector to the Local Government Board, held an inquiry at the Town Hall, Worksop, in respect of the application of the Urban Council for permission to borrow 8,500*l.* for the extension of the electric lighting plant. The Consulting Engineer (Mr. A. B. Mountain, of Huddersfield), said the present number of consumers was seventy-seven, representing 3,879 lamps of 8 candle-power, and there were thirty-five arc lamps in the street, representing 591 lamps of the same power. Nineteen prospective consumers had applied, and it was proposed to fix forty incandescent lamps in the side streets, representing an addition of 1,023 lamps.

ELECTRIC POWER STATION, NOTTINGHAM.—On the 9th inst. the last brick of the big chimney shaft at the new power station in St. Ann's Well-road was laid by the chairman of the electricity committee. There were present the City Engineer (Mr. Arthur Brown), the Electrical Engineer (Mr. H. Talbot), the Deputy City Engineer (Mr. T. W. Gordon), Mr. Thomas Barlow (contractor), and others. The height of the chimney above the ground is 220 ft., and the total height from the bottom of the foundation 254 ft. The foundation of the chimney is upon a concrete base 39 ft. square. The diameter of the chimney at the top (inside) is 13 ft. 6 in. Inside the chimney are two iron pipes, each 30 in. diameter, through which the exhaust steam is taken and delivered at the top of the chimney.

DONCASTER ELECTRICITY UNDERTAKING.—The application of the Corporation of Doncaster for permission to borrow a further sum of 16,487*l.* for the purpose of carrying out their electric lighting scheme was the subject of a public inquiry on the 8th inst. before Colonel Hepper, of the Local Government Board. Among those present were Mr. Wyld (electrical engineer), Mr. W. H. Crabtree (Borough Surveyor), and others. The Town Clerk (Mr. T. Sugden) said the object of the proposed loan was to make good an excess of the expenditure in connexion with a former loan for additions carried out during the construction of the works, and for further extensions, particularly for plant to supply current to the tramways undertaking.

THE NEW CATHEDRAL, CAPETOWN.—A sum of 20,000*l.* has been subscribed, mainly from colonial sources, towards the erection of the nave, aisles, tower, cloisters, chapter-house, and other parts of Capetown Cathedral, for which plans and designs have been prepared by Messrs. Baker & Masey. It is calculated that the entire fabric will cost 130,000*l.* An appeal is made for contributions of 28,000*l.* to the Memorial Fund of 35,000*l.* wherewith to defray the cost of building the choir with the memorial chapel and organ chamber.

THE PATENT OFFICE AND THE NEW LIBRARY.—The new library at No. 25, Southampton-buildings, was opened to the public on Thursday last week. It has been erected upon the site of the former library block, in the area which is surrounded by the new buildings for the Patent Office, which were begun about twelve years ago with the erection of the Sale of Specifications department between Took's-court and Quality-court, Chancery-lane. In Quality-court may yet be seen what we believe is the last work, in London, by Sir William Chambers that was completed during his lifetime. It forms the southern façade—a Classic Order with rusticated ground floor and an angle-pediment in Portland stone—of the offices which were originally built for the then Masters in Chancery, who removed thither from Symond's Inn, and which were subsequently taken for the Commissioners of Patents. On either side of the doorway, in Quality-court, were the offices of the "Secretaries of Bankrupts and Lunatics." The new buildings have been erected by Messrs. Perry & Co., contractors, from plans and designs prepared in the Office of Works, at a total estimated cost of about 162,500*l.*

"THE LONDON MANUAL" FOR 1902.—The sixth edition of this work has been brought well up to date, and included in its pages are several illustrations or diagrams of metropolitan improvements contemplated or in progress. The Manual contains a complete, but brief, account of how London is governed, including descriptions of the work of all public authorities and departments of the public service; a good index; an apparently reliable list of public officers; illustrations of the mayors' chain and badge of several of the London boroughs; and a good many portraits of leading municipal workers. The Manual, which is published by Edward Lloyd, Ltd., Salisbury-square, E.C., is a neat and handy work of reference.

"WILLING'S PRESS GUIDE."—The twenty-ninth annual issue of this excellent guide (published at 125, Strand, W.C.) has been carefully revised. The guide is one of the handiest and best works of the kind, and the information in it is arranged in an admirable way.

APPOINTMENT OF ARCHITECT, EDINBURGH SCHOOL BOARD.—On the 10th inst. the School Management Committee of the Edinburgh School Board met to appoint an architect and superintendent of works in room of the late Mr. Robert Wilson. Originally there were sixteen applicants for the office, but only the names of the following, which had been placed on a short leet, were before the Committee, viz., Messrs. R. M. Cameron, A. Lorne Campbell, James Carfrae, Henry F. Kerr, and H. Ramsay Taylor. The final vote lay between Mr. Carfrae and Mr. Campbell, and it resulted in ten supporting the former and three the latter. It was resolved accordingly to recommend that Mr. Carfrae be appointed. He has been in the employment of the late Mr. Wilson for the past twenty-four years.

LEIGHTON MEMORIAL AT ST. PAUL'S.—A part of the monument to be erected to the memory of the late Lord Leighton in St. Paul's Cathedral arrived at the sacred edifice on Monday. The monument, which has been executed by Mr. Thomas Brock,

R.A, consists of a massive cenotaph of marble, surmounted by a recumbent figure in bronze of Lord Leighton, who is represented in robes. At the head and foot there are small allegorical figures, also in bronze. A tablet bears the inscription: "To the memory of Frederick Baron Leighton, of Stretton, painter, seventh President of the Royal Academy of Arts. This monument is erected by his many friends and admirers. Born December 3, 1830. Died January 25, 1896. He lies buried in the crypt of this cathedral." The site selected for the memorial is the first arch of the north aisle.—*City Press.*

ARBITRATION CASE.—Mr. Pollock, Official Referee, had before him this week a case in which the plaintiff, Mr. John Gaymer, carrying on business at North Walsham, under the style of Cornish & Gaymer, sought to recover from Mr. John Smith, of St. Mary Abbott's-terrace, Kensington, the sum of 1,090*l.*, balance due under a contract for the erection of the Grand Hotel, Mundesley, and for extras in connexion therewith. The defendant counterclaimed for a like amount (1,090*l.*), claiming such sum by way of penalty, and in the alternative as damages for the non-completion of the building within the time limited by contract. The case occupied the whole of the 13th inst., during the greater part of which Mr. Herbert J. Green, of Norwich, the defendant's architect, was under examination. On the 14th inst., on the Official Referee taking his seat, Mr. Bousfield stated that, by consent, judgment would be entered for the plaintiff for 1,000*l.* on his claim, with costs, and that judgment would also be entered for him on the counter-claim, with costs.

EFFECTS OF A RUSTED VANE-ROD.—An inquiry was held at Chatham on the 10th inst. by Mr. Alfred Hands, F.R.Met.Soc., in reference to a claim by the Churchwardens of Holy Trinity Church, New Brompton, against the insurance company for damage alleged to have been caused to the spire of that church by lightning on some date unknown. Some stones having fallen in July last, an examination was made, and cracks being found of such a nature as to render immediate repairs necessary, the work was carried out, and compensation was claimed under the fire policy, which, as usual, contained a clause including lightning risks. The company having disputed the claim, Mr. Hands was appointed arbitrator, and after hearing expert evidence on both sides, and examining the broken stones which had been preserved for the purpose of the inquiry, decided that the damage was not caused by lightning but was due entirely to the rusting of the vane rod which passed through the stones, and therefore that the insurance company was not liable.

ENGLISH ELECTRICAL WORK IN PARIS.—In connexion with the celebrations on the occasion of M. Waldeck-Rousseau's visit to St. Etienne on Sunday and the opening of the new Prefecture buildings, it may be of interest to know that the French representatives of "Electric Lighting Boards, Ltd.," received from the Government the order for the electrical illuminations, the extent of the contract being for 1,250*l.*, and including as many as 4,000 lamps. A further important contract has also been obtained from the Paris Illuminating Company, no less than 30,000 ft. of flexible cable, 1,000 superficial feet of boards, and 15,000 lamps having to be provided.

MATTHEW HENRY'S CHAPEL, CHESTER.—Sir John Brunner, M.P., unveiled, at a special dedication service, two stained glass windows which he has presented to this chapel to commemorate its bi-centenary. The windows, which consist of three lights, contain in the centre ones figures of Matthew Henry and Dr. James Martineau respectively, and the side lights are filled with foliated ornament. The work is from the studio of Messrs. Powell Brothers, of Leeds.

CAPITAL AND LABOUR.

BRADFORD BUILDING TRADE DISPUTE.—The dispute which has been proceeding between the master masons and their operatives in Bradford was brought to a settlement on the 13th inst. after a cessation of work which has lasted since May 1 of last year. At the request of the Mayor, the representatives of the employers and the operative masons of the city met him at the Town Hall for the discussion of the matter. A letter had previously been received by the Mayor from the Bradford Trades and Labour Council, who gave hope that a settlement of the dispute might be effected, and upon the invitation of the Mayor the Master Builders' Association appointed as their representatives Alderman Holdsworth, Mr. Wallace Daykin, and Mr. A. Gadie, while the local branch of the Operative Masons' Society appointed Mr. T. Dalbridge, sen., Mr. T. Dalbridge, jun., Mr. R. Craggs, and Mr. Thomas Brown as their representatives. Concessions from the original demands were made on both sides, and a desire to arrive at an amicable arrangement was manifested on both sides. Under the arrangement the masons will resume work at a reduction of wages of ½d. per hour, and agree to work peaceably with non-unionists, while the masters withdraw a demand for a change in the dates on which notices of alterations in the conditions of work should be given.

LEGAL.

ACTION BY A DISTRICT COUNCIL FOR THE REPAIR OF A HIGHWAY.

IN the King's Bench Division, on the 11th inst., Mr. Justice Walton delivered a considered judgment in the case of the Esher District Council *v.* Marks, an action brought by the Urban District Council of Esher and the Dittons against the defendant, Mr. H. Marks, of Ember Court, near Thames Ditton, to recover 137*l.* 10s. 5d., the amount expended by the plaintiffs in repairing a highway known as Ember-lane. It appeared that in 1773 a Mr. George Onslow, the owner of the Ember Court estate, which was a manor of the parish of Thames Ditton, obtained the licence of the King to close up an old highway for carts, carriages, and foot passengers which passed through his property and ran from Thames Ditton and Esher to East and West Molesey. Mr. Onslow made a new road in substitution for the old one and undertook that it should be kept in good and sufficient repair by him, his heirs, and assigns. There was no dispute at the trial that Ember-lane, as originally laid out, was the road which Mr. Onslow was required to provide in the place of the old highway which he had stopped up and enclosed, and there was no evidence that it had ever been repaired by the inhabitants or any public body. In April, 1900, the Surveyor of the District Council discovered that the road was in a bad state of repair, and called upon the defendant, who was the owner of a portion of the original Ember Court estate, to repair it. The defendant denying liability the plaintiffs executed the necessary work and brought the present action to recover the amount they had expended.

His lordship now held that the road in question which was made in substitution for the old one, was, under the circumstances, repairable *ratione tenuræ*, and that the defendant was liable to repay the amount which the plaintiff Council had expended, and gave judgment for the plaintiffs with costs.

Mr. Macmorran, K.C., and Mr. Manisty, K.C., appeared as counsel for the plaintiffs; and Mr. Robson, K.C., and Mr. G. F. Hart for the defendant.

CASE UNDER THE 1894 BUILDING ACT.

AT Guildhall on Monday, Alderman Dr. Crosby gave his decision in the case of "Woodthorpe *v.* the Charing Cross and Strand Electric Supply Corporation (Limited)."

This was a summons under the 145th Section of the Building Act, at the instance of Mr. Edmund Woodthorpe, the District Surveyor for the northern division of the City, for beginning certain works without having served a notice upon him. The complaint was that defendant company had failed to give him any notice concerning an inspection-box that was in course of erection at the corner of Bishopsgate-street Within and Wormwood-street, and he complained of certain defects in construction. A point of law was raised by Mr. Shiress Will, K.C., first that this was not on all fours with the Whitechapel case, and that the special powers under which this electric lighting company carried on their works excluded them from the provisions of the Building Act. The date of the statute of the Building Act was 1894, while the provisional orders under which the company carried on their works were granted in 1899. The interests of the public were protected by a special code.

The Alderman said he had carefully thought over the facts of the case, and found that the company were the persons causing and directing the works in question. The work was a street-box for the purpose of inspection in connexion with electric energy, and he found that the company had not given notice in accordance with Section 145 of the Act. He held that this was a building structure, or work within the meaning of the Act, and he was unable to distinguish this case from the Whitechapel case. He convicted them, and imposed a fine of 40s. and two guineas costs.

Mr. Will: I have to ask the Court to state a special case in order that I may bring the matter by way of appeal.

The Alderman: I am sorry I cannot state one, because a special case on this point has been argued before a Divisional Court of three judges, two of whom were in favour of, and the other did not dissent from, that view. The matter has been fully argued in the Whitechapel case.

Mr. Will: As I understand the law, it is the duty of the court to state a special case, unless it is of opinion that the application is frivolous. I do not think that that can be said of this application. The High Court will have power to appoint a special divisional court, consisting of more than six judges, and such a court would be proper and have power to over-rule any other divisional court. It is with a view of getting finality in the matter. No harm can be done. Continuing, Mr. Will said he had another alternative, under the statute of 1879, to apply to the High Court for a rule nisi to enable the court to state a case.

The Alderman said he had no wish to be any obstruction, but in face of the ruling of the judges, and his own commonsense view of the case, h could not accede to the application. It would be like setting up his decision against that of the judges.

MARYLEBONE BUILDING DISPUTE.

THE case of White *v.* Harrow and Harrow *v.* the Marylebone District Property Co. came before the Court of Appeal, composed of Lord Justices Vaughan Williams, Stirling, and Cozens-Hardy, on the 14th inst. on the appeal of Mr. Harrow against a decision of Mr. Justice Joyce in the Chancery Division.

It appeared that White was the lessee from the Howard de Walden Estate trustees of No. 24, High-street, Marylebone, for a term of years expiring in 1932. On August 3, 1899, White sublet the house to Harrow for twenty-one years, together with all easements and appurtenances belonging to the premises. This lease contained a covenant by the lessee that he would not do anything to interfere with the quiet enjoyment of the adjoining premises nor object to any works to adjoining premises which might be sanctioned by the lessor or the superior landlord, nor claim any easement against the lessor or his superior landlord over any adjoining or neighbouring premises by reason of any act or thing done or suffered by any tenant of such adjoining or neighbouring premises. The lease also contained the usual covenant by the lessor for quiet enjoyment of the premises. The District Property Company having acquired an interest in the adjoining property to No. 24, High-street, and forming part of the same estate, proposed to erect some buildings which Harrow said would obstruct the light of his premises and brought an action to restrain the company from building so as to obstruct his light. The proposed buildings had been approved by the surveyor of the estate. White, who was then interested in the company, then took proceedings to restrain Harrow from prosecuting his action on the ground that it constituted a breach of his covenant. Mr. Justice Joyce held that the covenant which had been entered into by Harrow precluded him from raising objection to building works sanctioned by his lessor and the superior landlord, and stayed the proceedings in the action. From this decision Harrow appealed.

At the conclusion of the arguments, their lordships allowed the appeal, Lord Justice Vaughan Williams observing that in his opinion the word "adjoining" in the covenant meant "adjoining" in the sense in which the word was used in the Metropolitan Building Act, 1894. It was plain from the other parts of the lease that the word "adjoining" could not be used in this particular covenant in the sense of neighbouring. A narrower interpretation must be put on the word "adjoining."

The other Lords Justices concurred.

Mr. Younger, K.C., and Mr. Ford appeared for the appellant; and Mr. Hughes, K.C., and Mr. Wace for the respondent.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

16,483.—A PORTABLE ELECTRICAL BATTERY: *M. E. Fuld.*—The cell, induction-coils, and connexions are placed in a false top, which is pivoted in the upper portion of the case or box, and the terminals, &c., are disposed in the space thus obtained. The handle of the switch will, as the box is being closed, be lifted by the cover so as to break circuit automatically.

16,494.—A GULLY TRAP: *S. Chattwood.*—A tubular extension of the dished cover seals the trap. A pipe, which is carried up to the roof, ventilates a chamber into which gas may pass from the drain, the chamber, in most instances, being that which is fashioned upon the outlet side of the trapping-plate.

16,531.—PROCESS OF MOULDING BLOCKS OF ARTIFICIAL STONE: *A. Fannetaz.*—A platform which will rotate upon a middle column carries three moulds, in one of which a hydraulic ram presses the material whilst another mould is being charged, and a chain removes the block from the third mould, at the bottom of which is a plate connected with rods that are yoked to the chain. The chain is also secured to one side of a pulley upon a shaft, on which is a smaller pulley that carries the chain of the ram. By the use of steel plates in the moulds one can make half- and quarter-sized blocks.

16,626.—A REGENERATIVE GAS LAMP: *W. H. I. Welch.*—For the lamps specified in No. 8,318 of 1895, and for those that have either annular burners, or vertical or horizontal flat-flame burners. In the case of the last-named kind a cone closes the lower ends of tubes fashioned in the casting which supply air from above to be heated as it impinges against the cone on its way to the flame, and there is a casing that impels the warmed air upon the upper surface of the flame. For a lamp having an annular burner the air-current traverses apertures in the cone and cross-tubes as it flows to an annular chamber.

16,629.—A STRETCHER FOR ARTISTS' USE: *A. F. Tait.*—The bars of the stretcher are mitred at their ends, and are fastened together with triangular plates that fit into slots, dowel pins, and a

middle cross-bar. Each corner key has a body and a wedge shank with staggered teeth and a concave pointed end. The keys for the cross-bar are similarly shaped, but one side of the shank is straight.

16,036.—ANGLE-BARS FOR STRUCTURAL PURPOSES: *G. A. Weber.*—The bars are rolled so as to present outside strengthening ribs, in which may be cut recesses to facilitate the fixing of the bars on to supports, and through which bolts, rivets or spikes can be inserted.

16,050.—A VICE: *A. Peter.*—A piston which is worked with compressed air or with hydraulic pressure, moves the sliding jaw of the vice, and a rod, or a rod and lever, join the piston to the spindle; when the spindle is turned into engagement with half-threads on the jaw and spindle the jaw becomes locked, or it may be locked with a cam or bent lever.

16,661.—A VARNISH-CAN AND PAINT-POT: *C. Leisering.*—On the top-plate of the can is secured an open-ended funnel, of which the lower end reaches nearly to the bottom of the can. On the top-plate over the funnel is a ring, and in the cover is a hole for the brush-handle, a ring at the bottom holds the cover when the can is being used as a paint-pot. For use as a varnish-can the stopper is taken out of its place, varnish is poured through another inlet and will then rise in the funnel, its further flow being regulated by replacement or removal of the stopper.

16,665.—A BENCH CRAMP: *R. Charles.*—Spikes are employed for securing a base-plate to the bench. On the plate slides a rack, the work is gripped by a spiked head of the rack and, at the other end, with the customary stopping-piece. A lever, having a toothed-sector, moves the rack which, when so adjusted, is to be clamped by means of an eccentric and a lever that extends therefrom.

16,724.—SPRING-STOPS FOR WOOD-WORKING MACHINES: *F. Rawlinson.*—The inventor seeks to provide means of bringing the wood readily into a series of pre-arranged positions in the working of mortising, sawing, and similar machines. For one after the chain-mortising kind, he causes springs to force a set of studs upwards through the table, of which the under-side grooves afford free motion for the studs and springs, after the end of the wood has been set against one stud and a mortise has been cut by feeding the chain-cutter downwards. The wood is passed over and depresses the stud, and is then forced against the next stops in succession. In order that mortises may be cut right through, recesses are made in the table.

16,730.—A WORKMEN'S TELL-TALE: *C. F. C. Krumm and C. A. Krumm.*—A clock-train, fitted with cams and levers having anchors that engage with lug-wheels, drives wheels which print the hour and five-minutes intervals. The pulling of a draw-bar bearing rollers that run against steps, which are set obliquely within a platen block, causes the impressed cards to fall into a shoot, as the platen trips a detent from a hinged shelf, which is then set again; a too quick return of the shelf (through the quick return of the platen) is obviated by means of a lug on the side of the tail of the shelf which a spring joins to the platen, and a foot, with a toe, upon the platen; the toe will trip to one side a crooked spring that sustains a shelf, and the shelf, having fallen, will return to its normal place only after the passing of the foot over the lug.

16,733.—TILES FOR ROOFS: *A. Gustorf.*—The under and lower edges of the tiles have interlocking ribs and grooves, and grooves and ribs respectively, and the tiles have projections and recesses at their sides which similarly engage with one another. In the upper face of each tile are drainage grooves that extend upwards to the point of meeting, and the upper ends of the upper stop-grooves are closed.

16,775.—MEANS OF CUTTING SHEET LEAD, ZINC, COPPER, &c.: *C. W. West.*—Levers and a link cause the knife to traverse a slot cut lengthwise in a bed on which a slotted plate holds the sheet metal in its place, the distance of the plate above the bed being equal to the thickness of the metal. The machine, which is intended also for cutting sheets of india-rubber, leather, or cardboard, may be fitted with graduated measuring-bars upon its delivery side, and the knife is attached to, or is made of, the sharpened edge of the traversing plate.

16,797.—DREDGING APPARATUS: *O. Frühling.*—To facilitate the transfer of the material to the dumping-ground are devised adjustable openings and a pipe, fitted with a suction-pump, as an outlet from the chamber into which the spoil has been dredged. In front of each opening is another adjustable opening that communicates with one or two pipes, of which the remoter ends are in the sea. Each pair of openings can be closed separately, and an arrangement of cross webs, together with jets of water under pressure, prevent the spoil from stopping up the openings.

16,798.—ELECTRICAL-CONDUCTOR CONDUITS: *F. Zappe.*—Multiplied tubes, with it may be metal linings, are fashioned in blocks of cement, which are then laid in the form of conduits, with a rounded surface for the top layer. The blocks are fitted together with dowel and mortise and tenon pins, bonding both crosswise and lengthwise, and may have an internal waterproof lining of pitch, &c.

16,817.—DRYING KILNS: *W. W. Hewitt.*—Kilns for drying clay, slurry, slip, &c., for cement, bricks, pottery, and kindred goods are disposed side by side, and waste gases are conveyed above and beneath the drying floors, at the alternate ends of which are the flues; a passage through the floors serves for the charging of coke into the oven, and the hot gases are directed from one kiln to another, or to the chimney, by a vertical flue at the top of each kiln and a common passage regulated with dampers.

16,865.—A SUPPORT FOR ELECTRICAL CABLES AND CONDUCTORS: *D. P. Regan.*—The support consists of grooved arms, of which the T or otherwise enlarged heads are adapted to fit in an upright, either in keyhole slots or by a quarter-turn for which a rounded neck is provided.

16,871.—AN ANTI-CORROSIVE COMPOSITION: *W. Rule.*—A paint for coating iron, steel, and other surfaces, and which is especially intended for maritime purposes, is made of a mixture of fine resin, carbon pitch, mineral pitch, white naphtha, black naphtha, zinc white, and Russian turpentine.

16,879.—A TOOL FOR USE IN CUTTING WOOD MOULDINGS: *R. H. Griffin.*—After the moulding has been adjusted at the angle desired against the face of a plate and against a set-screw that serves as a back-stop, an outer ring, which is fitted upon a ring secured at a right angle to the plate, is rotated by means of its handles, whereupon a knife on the ring shaves or cuts the end of the moulding.

16,896.—FLUSHING APPARATUS: *F. G. Davidson and F. Don.*—The flush is started by means of an electro-magnetical apparatus, of which it is contrived that the magnet shall liberate a catch which under normal conditions sustains the tipping-tank which starts the siphon. The invention comprises a similar method of raising the crown of a trapped bell-siphon.

16,927.—CAPS FOR PIT-PROPS: *W. Cadenbach.*—Caps for protecting the ends of wooden pit-props are fashioned, out of sheet metal, with indented keys or tongues for engagement with recesses cut in the ends of the props; the caps and their tongues may be made in one piece, or separated angular tongues, having a U-cross-section, can be riveted on to the cap-tongues.

16,949.—APPLIANCES FOR USE IN THE MOULDING OF BUILDING BLOCKS: *F. C. Sellars.*—For rolling and stamping machinery for solid blocks, and for the parts of machinery for solid or hollow blocks. A flexible rotatory shaft carries a pressing-roller, which is worked with handles that are mounted loosely upon the shaft. A sliding frame to be adjusted vertically with levers carries a set of plungers worked with springs and a belt-driven cam-shaft. Cams upon a flexible shaft reciprocate a sliding frame, upon which are stampers that ram the material in the mould. An inside ejector-ring is fitted in a loose lining or anti-suction metallic plate, whilst sliding guide-pins join a similar plate to the upper plunger, and cores or prints form recesses in the blocks for angle- or T-bars. Confer also No. 25,214 of 1899.

MEETINGS.

FRIDAY, JANUARY 17.

Architectural Association.—Mr. T. C. Cunnington on "Architectural and Constructional Engineering." 7.30 p.m.

Royal Institution.—Rt. Hon. Lord Rayleigh on "Interference of Sound." His Grace the President will, after the discourse, unveil and present to the Institution a bust by the late Mr. Onslow Ford, R.A., of Sir Frederick Bramwell, Bart., D.C.L., LL.D., F.R.S., Hon. Secretary of the Royal Institution from 1885 to 1900. 9 p.m.

Institution of Civil Engineers (Students' Meeting).—Captain H. Riall Sankey on "The Theory of Heat-Engines." 8 p.m.

Institution of Mechanical Engineers.—(1) Nomination of officers for election at the annual general meeting on February 21; (2) Mr. H. F. L. Orcutt on "Modern Machine Methods." 8 p.m.

SATURDAY, JANUARY 18.

The Builders' Foremen's Association (Memorial Hall, Farringdon-street, E.C.).—Eighth Annual Dinner, at the Holborn Restaurant. 6.30 p.m.

MONDAY, JANUARY 20.

Royal Institute of British Architects.—(1) To read the Deed of Award of Prizes and Studentships for 1901-1902. (2) Mr. Detmar J. Blow on "The Architectural Discoveries of 1901 at Stonehenge," illustrated by lantern slides. 8 p.m.

Society of Arts (Cantor Lectures).—Dr. Samuel Rideal on "The Purification and Sterilisation of Water." II. 8 p.m.

Liverpool Architectural Society.—Mr. R. Wynne Owen on "The Value of Sketching," accompanied by lantern slides and some examples of original sketches by well-known architects. 6 p.m.

Glasgow Philosophical Society.—Paper by Professor G. G. Henderson, D.Sc., entitled "Chemical Notes on Building Materials." 8 p.m.

TUESDAY, JANUARY 21.

Institution of Civil Engineers.—Paper to be further discussed: "American Workshop Methods in Steel Construction"; by Mr. H. B. Molesworth. 8 p.m.

Society of Arts (Applied Art Section).—Mr. Halsey Ricardo on "The Architect's Use of Enamelled Tiles." 8 p.m.

Architectural Association of Ireland.—Mr. G. P. Sheridan on "A Holiday on the Continent (Rome, Florence, Venice, Milan, &c.)," with lantern views. 7.45 p.m.

WEDNESDAY, JANUARY 22.

Society of Arts.—Rev. J. M. Bacon on "Scientific Observations at High Altitudes." 8 p.m.

Institution of Civil Engineers.—Students' visit to the Testing Works of Messrs. David Kirkaldy & Son. (Assemble at the Works, 99, Southwark-street, S.E.) 2.30 p.m.

Devon and Exeter Architectural Society (Plymouth, Devonport, and Stonehouse Branch).—Mr. Edmund Sedding on "Old Cornish Towers," with lantern illustrations.

Edinburgh Architectural Association.—Mr. Thomas Aldwinckle on "Public Baths and Wash-houses," illustrated by drawings and lime-light views. 8 p.m.

Institution of Electrical Engineers (Birmingham local Section).—Mr. W. Kingsland on "Surface Contact Systems of Electric Traction." 7.30 p.m.

THURSDAY, JANUARY 23.

Royal Institution.—Dr. A. S. Murray on "Recent Excavations at Delphi and in the Greek Islands." II. 3 p.m.

Institution of Electrical Engineers.—Mr. E. B. Wedmore on "Earth Currents Derived from Distributing Systems." 8 p.m.

Institution of Electrical Engineers (Dublin Section). Mr. W. Brew on "Inductive Circuits." 7.30 p.m.

FRIDAY, JANUARY 24.

Architectural Association Discussion Section.—Mr. F. G. W. Buss on "The Clerk of Works: His Duties and Responsibilities." 7.30 p.m.

Birmingham Architectural Association.—Mr. Halsey Ricardo on "The Gothic Revival."

Devon and Exeter Architectural Society (Plymouth, Devonport, and Stonehouse Branch).—Annual Dinner.

Glasgow Architectural Craftsmen's Society.—Mr. James Lochhead on "Hospital Planning and Construction." 8 p.m.

SATURDAY, JANUARY 25.

Institution of Junior Engineers.—Seventeenth Anniversary Dinner, at the Hotel Cecil, the President (Sir John Jackson, F.R.S.E.) in the chair. 6.30 p.m.

Dundee Institute of Architecture.—Visit to Perth.

SOME RECENT SALES OF PROPERTY

ESTATE EXCHANGE REPORT.

January 7.—By W. MARTIN & Co.

Peckham.—24, The Gardens, u.t. 72½ yrs., g.r. 9*l.*, e.r. 45*l.* £550

January 9.—By S. H. DAVIDS & Co.

Bayswater.—5, Wellington Mews, f., r. 18*l.* 250

By LINNETT & LANE.

Willesden.—8 and 10, Disraeli-rd., u.t. 78¾ yrs., g.r. 10*l.* 325

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS &c.

	£ s. d.	
Hard Stocks	1 11 6	per 1,000 alongside, in river.
Rough Stocks and Grizzles	1 9 6	,, ,, ,,
Facing Stocks	2 12 0	,, ,, ,,
Shippers	2 5 0	,, ,, ,,
Flettons	1 8 0	,, at railway depôt.
Red Wire Cuts ..	1 12 0	,, ,, ,,
Best Fareham Red	3 11 0	,, ,, ,,
Best Red Pressed Ruabon Facing.	5 5 0	,, ,, ,,

BRICKS, &c.

	£ s. d.	
Best Blue Pressed Staffordshire ..	4 6 6	per 1,000 at railway depot.
Do., Bullnose	4 10 0	,, ,, ,,
Best Stourbridge Fire Bricks	4 5 6	,, ,, ,,
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers.....	13 0 0	,, ,, ,,
Headers	12 0 0	,, ,, ,,
Quoins, Bullnose, and Flats	17 0 0	,, ,, ,,
Double Stretchers	10 0 0	,, ,, ,,
Double Headers..	16 0 0	,, ,, ,,
One Side and two Ends	19 0 0	,, ,, ,,
Two Sides and one End	20 0 0	,, ,, ,,
Splays, Chamfered, Squints	20 0 0	,, ,, ,,
Best Dipped Salt Glazed Stretchers and Headers ..	12 0 0	,, ,, ,,
Quoins, Bullnose, and Flats	14 0 0	,, ,, ,,
Double Stretchers	15 0 0	,, ,, ,,
Double Headers..	14 0 0	,, ,, ,,
One Side and two Ends	15 0 0	,, ,, ,,
Two Sides and one End	15 0 0	,, ,, ,,
Splays, Chamfered, Squints.....	14 0 0	,, ,, ,,
Seconds Quality White and Dipped Salt Glazed	2 0 0	,, less than best.

	s. d.	
Thames and Pit Sand	7 3	per yard, delivered.
Thames Ballast	6 0	,, ,,
Best Portland Cement	32 0	per ton, delivered.
Best Ground Blue Lias Lime..	25 0	,, ,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime..... 11s. od. per yard, delivered.

Stourbridge Fire-clay in sacks, 26s. 6d. per ton at rly. dpt.

[*See also page 71.*

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Required.	Premiums.	Designs to be delivered
*Laying-out Pleasure Ground	Aldershot U.D.C.	20*l.*, 10*l.* and 5*l.*	Mar. 1
*Proposed Public Offices	do.	100*l.*, 75*l.* and 50*l.*	Mar. 29
*Queen Victoria Memorial	The Committee	Not stated	No date

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., Supplied by	Tenders to be delivered
Workhouse Laundry	Belfast Guardians	Young & Mackenzie, Civil Engineers, Belfast	Jan. 21
Road Extension, near Shotton, Wrexham	Trustees of Mr. B. Piercy	A. E. Johnson, Civil Engineer, Egerton-street, Wrexham	do.
Road Works, Colum-lane	Cardiff Corporation	W. Harpur, Civil Engineer, Town Hall, Cardiff	do.
Cast-iron Gas Pipes, near Manchester	Stretford Gas Company	H. Kendrick, Engineer, Gas Offices, Stretford	do.
Cast-iron Pipes	Chorley (Lancs) Corporation	J. W. Allin, Gas Engineer, Town Hall, Chorley	do.
Hospital, &c., London-road	Sheffield Corporation	Borough Surveyor, Town Hall, Sheffield	do.
School, Chapman-street	Kingston-upon-Hull School Board	Gelder & Kitchen, Architects, Lowgate, Hull	do.
Repairs, &c., at Schools	Leeds School Board	W. Packer, School Board Offices, Leeds	do.
Additions to Workhouse, Elm-grove	Brighton Guardians	H. S. Reed, Parochial Offices, Brighton	do.
Offices, &c., Broad-street	Bury (Lancs) Corporation	A. W. Bradley, Civil Engineer, Town Hall, Bury	do.
Paving Works, Broughton	Salford Corporation	L. C. Evans, Town Hall, Salford	do.
Surveyors' Materials	Downham Market R.D.C.	H. Wayman, Union Offices, Downham Market	do.
Electrical Equipment	Hunslet (Leeds) Guardians	Shepherd & Watney, Engineers, Greek-street Chambers, Leeds	do.
Making-up, &c., Junction-road	Brentford U.D.C.	N. Parr, Surveyor, Clifden House, Boston-road, Brentford	do.
Villa, Llangollen		Mr. Denny, Architect, Llangollen, N. Wales	do.
Road Materials	Acton District Council	D. J. Ebbetts, Surveyor, 242, High-street, Acton, W.	do.
Road Materials	Salisbury R.D.C.	D. W. Morrice, Surveyor, Homington, Salisbury	do.
Five Houses, Scar-lane, Golcar		J. Berry, Architect, 3, Market-place, Huddersfield	do.
Improvements to West Cliff	Cromer Protection Commissioners	Douglas & Arnott, Engineers, 15, Victoria-street, S.W.	Jan. 22
Conveniences, Burgate-street	Canterbury Corporation	A. C. Turley, Civil Engineer, Tudor Chambers, Canterbury	do.
Additions to Schools, Juniper Green	Colinton (N.B.) School Board	J. A. Carfrae, Architect, 3, Queen-street, Edinburgh	do.
Asphalte Works at Cemetery	Blaydon-on-Tyne Burial Board	J. H. Rogers, Blaydon	do.
Bandstand, &c.	Edinburgh Corporation	R. Morham, City Architect, City Chambers, Edinburgh	do.
Sanitary Conveniences, Burgate-street	Canterbury Corporation	A. C. Turley, Civil Engineer, Tudor Chambers, Canterbury	do.
Business Premises. Pow-street, Workington	Mr. T. Browne	J. S. Moffat, Architect, 53, Church-street, Whitehaven	do.
Whinstone Setts (500 tons)	Dundee Town Council	W. Mackison, Civil Engineer, 91, Commercial-street, Dundee	Jan. 23
Granite, near Coventry	Meriden R.D.C.	A. Seymour, 11, Priory-street, Coventry	do.
Fire-clay Goods	Bolton (Lancs) Corporation	W. Walch, Gas Office, Bolton	do.
Paving New-road, and Walsall-street	Willenhall (Staffs) U.D.C.	T. E. Fellowes, Engineer, Town Hall, Willenhall	do.
Electricity Works, Sculcoates-lane	Hull Corporation	A. E. White, City Engineer, Town Hall, Hull	do.
Granite and Slag (20,000 tons)	Sleaford (Lincs) R.D.C.	E. Clements, 74, Southgate, Sleaford	do.
Granite and Slag Road Metal	Brigg (Lincs) R.D.C.	F. C. Hett, Council Offices, Brigg	do.
*Road Making, Kerbing, Paving, &c.	Hackney Borough Council	Borough Engineer, Town Hall, Hackney	do.
*Extension of Electric Light Works	Hull Corporation	City Engineer, Town Hall, Hull	do.
Houses, Stabling, &c	Aston Manor U.D.C.	G. H. Jack, Engineer, Council House, Aston Manor	Jan. 24
Club premises, Raunds		Brown & Fisher, Architect, Wellingborough	do.
Street Works, Curzon-street to Albert-avenue	Hull Corporation	A. E. White, City Engineer, Town Hall, Hull	do.
Cast-iron pipes (2,560 tons)	do.	F. J. Bancroft, Engineer, Hull	Jan. 25
House, Ebbw Vale	Primitive Methodist Trustees	H. Waters, Architect, Beaufort, Ebbw Vale	do.
Villa, &c., Worsborough Bridge, near Barnsley		Senior & Clegg, Architects, 15, Regent-street, Barnsley	do.
Schools, Queenstown, Co. Cork.	Dr. Browne	J. F. Hynes, Architect, 21, South Mall, Cork	do.
Wrought Iron Piping	Blackburn Corporation	Borough Surveyor, Town Hall, Blackburn	do.
Drainage Works, Dale-street, &c.	Rugby U.D.C.	D. G. Macdonald, Civil Engineer, Council Offices, Rugby	do.
Road Works, Duke-street	Alderley U.D.C.	H. Sheldon, Surveyor, Alderley Edge	do.
12 Houses, Turberville-road, Llwynypia, Wales	Pontrhonnda Building Club	W. C. Pritchard, Glamorgan Offices, Llwynypia	do.
Fireclay Retorts and Bricks	Leigh (Lancs) Corporation	J. Foster, Gas Works, Leigh	do.
Road Metal, &c.	Birmingham Corporation	J. Price, Engineer, Council House, Birmingham	do.
Electricity Generating Station	Hartlepool Corporation	Borough Surveyor, Town Hall, Hartlepool	do.
Additions to County School, Ystalyfera	Glamorgan County Council	W. W. Williams. Architect, 63, Wind-street, Swansea	do.
Sewerage Works, Mundesley, Norfolk	Erpingham R.D.C.	T. I. Goldie, Engineer, Bank Plain, Norwich	do.
Road Works, Gregson-road, &c. (Contract 124)	Lancaster Corporation	T. C. Hughes, Town Hall, Lancaster	Jan. 26
*Fire Hose and Fittings, Horton Asylum, Epsom	London County Council	R. W. Partridge, 6, Waterloo-place, S.W.	Jan. 27
*Making-up Bevington and Warwick-roads	Beckenham U.D.C.	J. A. Angell	do.
Lodge, Engine House, &c., Bamford, near Sheffield	Derwent Valley Water Board	E. Sandeman, Civil Engineer, Bamford, via Sheffield	Jan. 28
*Road Making and Paving Works	Willesden District Council	Council's Engineer, Dyne-road, Kilburn, N.W.	do.
*Street Improvement Works	Bromley U.D.C.	Council's Surveyor, Bromley, Kent	do.
Railway Station, South Shore, Blackpool	L. & Y. and L. & N. W. Ry. Cos.	R. C. Irwin, Hunt's Bank, Manchester	Jan. 29
*Supply, &c., of Articles and Works for 12 months	Chelsea Council	Borough Surveyor, Town Hall, King's-road, S.W.	do.
*Petty Sessional Courts and Offices	City and County of Bristol	T. Roderick, Architect, Clifton-street, Aberdeen	Jan. 30
Fire Station, The Crescent, Salford		H. Kirkley, Architect, 134, Deansgate, Manchester	Jan. 31
Houses at Main Depot	Wrexham Town Council	Borough Surveyor, Guildhall, Wrexham	Feb. 1
*New Sewers and Roads, Walmer	Walmer Estates, Co., Ltd.	Hinds & Son, Estate Agents, Walmer	do.
100 Houses, Penydarren	Merthyr Tydfil U.D.C.	T. A. Rees, Town Hall, Merthyr	Feb. 3
*Road Materials, Horse Hire, &c.	Leyton U.D.C.	W. Dawson, Town Hall, Leyton, E.	do.
*Annual Contracts	Hendon U.D.C.	Council's Engineer, Public Offices, Hendon	do.
*Extension of Electric Lighting Station	Shoreditch Council	J. R. Dixon, Town Hall, Old-street, E.C.	Feb. 4
Sewerage Works	Sudbury (Suffolk) Corporation	T. W. A. Hayward, Civil Engineer, Town Hall, Sudbury	Feb. 8
*Annual Contracts	Camberwell Council	Borough Engineer, Town Hall, Camberwell	Feb. 10
*Re-Erecting the Crown Bridge near Griffithstown	Panteg U.D.C.	D. J. Lougher, Engineer, Pontypool	do.
*Technical Institute, Library, &c.	Eastbourne Corporation	Borough Engineer, Town Hall, Eastbourne	do.
*Annual Contracts	Wandsworth Council	Town Clerk, Council House, Wandsworth, S.W.	do.
Railway Bridge, Newcastle-on-Tyne	North Eastern Railway Co.	C. A. Harrison, Central Station, Newcastle	Feb. 12
*Main Drainage Works, New Sewers, &c., &c.	Stamford Corporation	Engineer's Office, 6, Millstone-lane, Leicester	Feb. 17
*Main Drainage Works, Engine House, Cottage, &c.	do.	do.	do.
Alterations to Market	Wrexham Town Council	Borough Surveyor, Guildhall, Wrexham	Feb. 18
Cottage Hospital, Southwold, Suffolk		R. C. Cordon, Surveyor, Duffield, near Derby	Feb. 22
Road Metal, &c.	Belper R.D.C.	E. N. Cubitt, Architect, Brentwood, Essex	No date
Two Houses, Tulse Hill Station, S.W.		Mr. Sadgrove, 22, Surrey-street, Strand	do.
Additions to Fernhill Chemical Works, Bury, Lancs.		J. Sellers & Son, Architects, Union-Chambers, Bury	do.
Pair of Cottages, Bemerton, Salisbury		J. Harding & Son, Architects, 58, High-street, Salisbury	do.
Business Premises, High-street, Chepstow	Mr. H. Lewis	Swash & Bain, Architects, Newport, Mon.	do.
Additions to St. Vincent's Home, Hull		Brodrick & Co., Architects, 77, Lowgate, Hull	do.
House, Kirkland, Kendal	Mr. E. Hetherington	J. Hutton, Architect, Kendal	do.
Additions to Chapel, Melbourne-road, Leicester		H. Harper, Architect, 54, Long-row, Nottingham	do.

[See also next page.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Assistant Surveyor & Divisional Superintendent	Westminster City Council.....	400*l.*	Jan. 27
*Assistant Surveyor & Divisional Superintendent	do.	300*l.*	do.
*Assistant Surveyors & Divisional Superintendents (2)	do.	250*l.* each	do.
*General Assistant to Divisional Superintendents	do.	160*l.*	do.
*General Assistant to Divisional Superintendents	do.	150*l.*	do.
*Chief Draughtsman	do.	250*l.*	do.
*Engineering Draughtsman	do.	190*l.*	do.
*Surveying Assistant	do.	180*l.*	do.
*General Draughtsmen (2).....	do.	150*l.* each	do.
*Testing Assistant	do	156*l.*	do.
*Clerks of Works (2)	do.	156*l.* each	do.
*Inspectors (2)	do.	156*l.* each	do.

Those marked with an asterisk (*) are advertised in this Number. Competitions, p. iv. *Contracts, pp.* iv. vi. viii. x *&* xxii. *Public Appointments, pp.* xix. *&* xxii.

PRICES CURRENT (*Continued*).

STONE.

	s. d.		
Ancaster in blocks	1 11	per ft. cube, deld. rly. depôt.	
Bath ,, ...	1 7	,,	,,
Farleigh Down Bath ..	1 8	,,	,,
Beer in blocks	1 6½	,,	,,
Grinshill ,, ...	1 10	,,	,,
Brown Portland in blocks	2 2	,,	,,
Darley Dale in blocks..	2 4	,,	,,
Red Corsehill ,,	2 5	,,	,,
Red Mansfield ,,	2 4	,,	,,
Hard York in blocks ..	2 10	,,	,,
Hard York 6 in. sawn both sides landings, to sizes (under 40 ft. sup)	2 8	per ft. super. at rly. depôt.	
,, ,, 6 in. Rubbed Ditto..	3 0	,,	,,
,, ,, 5 in. sawn both sides slabs (random sizes)	1 3	,,	,,
,, ,, 2 in. self-faced Ditto	0 9½	,,	,,
Hopton Wood (Hard Bed) in blocks	2 3	per ft. cube. deld. rly. depôt.	
,, ,, ,, 6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt.	
,, ,, ,, 3 in. do.	1 2½	,,	,,

SLATES.

in. in.	£ s. d.	
20×10 best blue Bangor..	11 15 0	per 1000 of 1200 at ry. dep.
,, best seconds ,,	11 5 0	,, ,,
16×8 best ,,	6 12 0	,, ,,
20×10 best blue Portmadoc	11 5 0	,, ,,
16×8 best blue Portmadoc	6 0 0	,, ,,
20×10 best Eureka unfading green....	12 2 6	,, ,,
16×8 ,, ,,	7 5 0	,, ,,
20×10 permanent green	10 5 0	,, ,,
16×8 ,, ,,	5 17 6	,, ,,

TILES.

	s. d.	
Best plain red roofing tiles..	4 1 6	per 1,000, at rly. depôt.
Hip and valley tiles....	3 7	per doz. ,, ,,
Best Broseley tiles	48 6	per 1,000 ,, ,,
Hip and valley tiles....	4 0	per doz. ,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57 6	per 1,000 ,, ,,
Do. ornamental Do.	60 0	,, ,, ,,
Hip tiles	4 0	per doz. ,, ,,
Valley tiles	3 9	,, ,, ,,
Best Red or Mottled Staffordshire Do. (Peakes) .	50 9	per 1,000 ,, ,,
Hip tiles	4 1	per doz. ,, ,,
Valley tiles.....	3 8	,, ,, ,,

WOOD.

BUILDING WOOD.—YELLOW.

	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.....	13 10 0	15 10 0
Deals: best 3 by 9.....	13 0 0	14 10 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.....	10 0 0	11 0 0
Battens: best 2½ by 6 and 3 by 6 ..	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best
Battens: seconds	0 10 0	,, ,, ,,
2 in. by 4 in. and 2 in. by 6 in. ..	8 10 0	9 10 0
2½ in. by 4½ in. and 2 in by 5 in. ..	8 0 0	9 0 0
Foreign Sawn Boards— 1 in. by 1¼ in. by 1½ in.	0 10 0	more than battens.
¾ in.	1 0 0	,,
Fir timber: Best middling Danzig or Memel (average specification)	At per load of 50 ft.	
Seconds	4 10 0	5 0 0
Small timber (8 in. to 10 in.)	4 5 0	4 10 0
Swedish balks.....	3 12 6	3 15 0
Pitch-pine timber (30 ft.).....	2 15 0	3 0 0
	3 0 0	3 10 0

JOINERS' WOOD.

	At per standard.	
White Sea: First yellow deals, 3 in. by 11 in.	22 0 0	23 0 0
¾ in. by 9 in.	20 0 0	21 0 0
Battens, 2½ in. and 3 in. by 7 in.	15 0 0	16 0 0
Second yellow deals, 3 in. by 11 in.	17 0 0	18 0 0
,, ,, 3 in. by 9 in.	15 10 0	16 10 0
Battens, 2½ in. and 3 in. by 7 in.	12 0 0	13 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	12 10 0	13 10 0
Battens, 2½ in. and 3 in. by 7 in.	10 10 0	11 10 0

PRICES CURRENT (*Continued*).

WOOD.

	At per standard. £ s. d.	£ s. d.
Petersburg: first yellow deals, 3 in. by 11 in.	19 0 0	20 0 0
Do. 3 in. by 9 in.	16 0 0	17 0 0
Battens.....	12 10 0	13 0 0
Second yellow deals, 3 in. by 11 in.....	14 0 0	15 0 0
Do. 3 in. by 9 in.	13 0 0	14 0 0
Battens.....	11 0 0	12 0 0
Third yellow deals, 3 in. by 11 in.....	11 10 0	12 10 0
Do. 3 in. by 9 in.	11 0 0	12 0 0
Battens.....	10 0 0	11 0 0
White Sea and Petersburg:—		
First white deals, 3 in. by 11 in.	13 10 0	14 10 0
,, ,, ,, 3 in. by 9 in.	12 10 0	13 0 0
Battens.....	10 10 0	11 10 0
Second white deals 3 in. by 11 in.	12 10 0	13 10 0
,, ,, ,, 3 in. by 9 in.	12 0 0	12 10 0
,, ,, ,, battens.....	9 10 0	10 10 0
Pitch-pine: deals	16 0 0	18 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—First, regular sizes..	32 0 0	33 10 0
Broads (12 in. and up).....	2 0 0	more.
Oddments	22 0 0	24 0 0
Seconds, regular sizes	24 10 0	26 10 0
Yellow Pine Oddments	20 0 0	22 0 0
Kauri Pine—Planks, per ft. cube..	0 3 6	0 4 6
Danzig and Stettin Oak Logs— Large, per ft. cube	0 2 6	0 3 0
Small ,, ,, ...	0 2 3	0 2 6
Wainscot Oak Logs, per ft. cube ..	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 8	0 0 7
¾ in. do. do.	0 0 7	- - -
Dry Mahogany— Honduras, Tabasco, per ft. sup. as inch	0 0 9	0 0 11
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	16 0 0	20 0 0
American Whitewood Planks— Per ft. cube.....	0 3 0	0 3 6
Prepared Flooring—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 0	0 16 6
1 in. by 7 in. yellow, planed and matched	0 13 6	0 17 6
1¼ in. by 7 in. yellow, planed and matched	0 15 0	1 0 0
6 in. at 6d. per square less than 7 in.		
1 in. by 7 in. white, planed and shot	0 11 0	0 12 6
1 in. by 7 in. white, planed and matched	0 11 6	0 13 6
1¼ in. by 7 in. white, planed and matched	0 13 6	0 15 6
6 in. at 6d. per square less than 7 in.		

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0	7 5 0
Compound Girders ,, ,,	8 0 0	9 0 0
Angles, Tees and Channels, ordinary sections	8 2 6	9 2 6
Flitch Plates	8 10 0	0 0 0
Cast Iron Columns and Stanchions, including ordinary patterns	7 0 0	8 0 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars.....	8 0 0	8 10 0
Staffordshire Crown Bars, good merchant quality	8 10 0	9 0 0
Staffordshire "Marked Bars" ..	10 10 0	- -
Mild Steel Bars.....	9 0 0	9 10 0
Hoop Iron, basis price.....	9 5 0	9 15 0
,, ,, galvanised.....	16 0 0	- - -
(* And upwards, according to size and gauge.)		
Sheet Iron, Black.—		
Ordinary sizes to 20 g.....	10 0 0	- - -
,, ,, to 24 g.....	11 0 0	- - -
,, ,, to 26 g.....	12 10 0	- - -
Sheet Iron, Galvanised, flat, ordinary quality.—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.....	12 10 0	- - -
,, ,, 22 g. and 24 g.	13 0 0	- - -
,, ,, 26 g.....	14 0 0	- - -

PRICES CURRENT (*Continued*).

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Sheet Iron, Galvanised, flat, best quality:—		
Ordinary sizes to 20 g.....	16 10 0	- - -
,, ,, 22 g. and 24 g.	17 0 0	- - -
,, ,, 26 g.....	18 10 0	- - -
Galvanised Corrugated Sheets.—		
Ordinary sizes, 6 ft. to 8 ft. 20 g.	12 10 0	- - -
,, ,, 22 g. and 24 g.	13 0 0	- - -
,, ,, 26 g.	14 0 0	- - -
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker ..	12 5 0	- - -
,, ,, 22 g. and 24 g.	13 5 0	- - -
,, ,, 26 g.	14 5 0	- - -
Cut nails, 3 in. to 6 in.	9 10 0	10 0 0
(Under 3 in. usual trade extras.)		

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3 lbs. & up.	12 15 0	- - -
Pipe in coils	13 5 0	- - -
Soil Pipe.....	15 15 0	- - -
ZINC—Sheet—		
Vieille Montagne..... ton	24 10 0	- - -
Silesian	24 0 0	- - -
COPPER—		
Strong Sheet..... per lb.	0 1 0	- - -
Thin ..... ,,	0 1 1½	- -
Copper nails..... ,,	0 1 1½	- -
BRASS—		
Strong Sheet..... ,,	0 0 11	- - -
Thin ,, ... ,,	0 1 1	- - -
TIN—English Ingots..... ,,	0 1 3	- - -
SOLDER—Plumbers' ..... ,,	0 0 6½	- - -
Tinmen's ..... ,,	0 0 8	- - -
Blowpipe ..... ,,	0 0 9	- - -

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2¾d. per ft. delivered.
,, fourths	2½d. ,, ,,
21 oz. thirds	3¼d. ,, ,,
,, fourths.....	3¼d. ,, ,,
26 oz. thirds	4¾d. ,, ,,
,, fourths	4¼d. ,, ,,
32 oz. thirds	5¼d. ,, ,,
,, fourths	5¼d. ,, ,,
Fluted sheet, 15 oz.....	3¼d. ,, ,,
,, 21 ,, ...	4¼d. ,, ,,
⅛ Hartley's Rolled Plate	2¼d. ,, ,,
3/16 ,, ,, ,, ...	2½d. ,, ,,
¼ ,, ,, ,, ...	2¾d. ,, ,,

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes.....	per gallon	0 2 8
,, ,, ,, in barrels	,,	0 2 9
,, ,, ,, in drums	,,	0 2 11
Boiled ,, ,, in pipes	,,	0 2 10
,, ,, ,, in barrels	,,	0 2 11
,, ,, ,, in drums	,,	0 3 1
Turpentine, in barrels	,,	0 2 3
,, in drums	,,	0 2 6
Genuine Ground English White Lead	per ton	21 0 0
Red Lead, Dry	,,	21 0 0
Best Linseed Oil Putty	per cwt.	0 8 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Elastic Copal Varnish for outside work ..	0 16 6
Best Elastic Copal Varnish for outside work ..	1 0 0
Best Elastic Carriage Varnish for outside work	0 16 0
Best Hard Oak Varnish for inside work.....	0 10 6
Best Extra Hard Church Oak Varnish for inside work	0 10 6
Fine Hard Copal Varnish for inside work.....	0 16 0
Best Hard Copal Varnish for inside work.....	1 0 0
Best Hard Carriage Varnish for inside work ...	0 16 0
Extra Pale Paper Varnish	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
Best French and Brush Polish	0 10 0

[*See also next page.*

TO CORRESPONDENTS.

P. S. M. (As you say "the smoke is not very noticeable when the flue is thoroughly heated," that seems to be the explanation.)

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BANCHORY.—For bank and agent's house in Banchory, for the Town and County Bank, Limited, Aberdeen. Mr. Robert G. Wilson, architect. Quantities by architect:—

Masonry.—George Wilson, Banchory .....
Carpentry.—J. Henderson, Aberdeen .....
Slating.—George Merson, Banchory.....
Plastering.—J. Bannochie & Sons, Aberdeen
Plumbing.—Thom & Strachan, Aberdeen....
Painting.—George Chrystall, Banchory ....
} £1,500

BIRMINGHAM.—For the erection of pavilions, &c., at workhouse, Erdington, for the Guardians of Aston Union. Messrs. C. Whitwell & Son, architects, 23, Temple-row, Birmingham. Quantities by Messrs. Thos. Jones and C. Whitwell:—

Surman & Son	£18,106	Giles & Son	£16,266
W. and J. Webb ..	17,719	W. Robinson	16,190
Barnsley & Sons ..	16,666	A. Colin Hughes ..	15,985
R. Merton Hughes	16,489	W. Harvey Gibbs..	15,725
Whitehouse & Sons	16,475	Thos. Johnson, Birmingham*	15,700
Lee & Sons.....	16,446		

DOVER.—For pulling down and rebuilding the Dewdrop Inn, Dover, for Messrs. Thomas Phillips & Co., Ltd. Mr. A. H. Steele, architect, Dover. Quantities by the architect:—

Keeler Bros...	£1,168 7 2	Beaufoy	£998 0 0
Turner & Co.	1,075 0 0	Austen & Lewis	988 0 0
Lewis & Sons	1,060 0 0	Stokes	970 0 0
Goldsmith & Tapley	1,050 0 0	Francis	962 0 0
Brisley & Co.	1,031 1 8	Griggs	940 0 0

[All of Dover.]
[Architect's estimate, £1,027.]

HOLYHEAD.—For the erection of school buildings, Kingsland, for the School Board. Mr. William Williams, architect, Holyhead:—

Williams & Sons....	£1,450	E., R., & J. Owen, Holyhead*	£1,074

HULL.—For rebuilding the Tally Ho, Bond-street, for Messrs. Moors & Robson's Brewery, Ltd., Messrs. Freeman, Son, & Yaskell, architects, 11, Carr-lane, Hull:—

T. Goates, Brunswick-avenue, Hull*..... £2,043

LLANFAIRFECHAN. — For alterations to St. Andrew's Hospital. Mr. C. H. Dorman, architect, Northampton:—

T. J. Owen	£735 17 9	R. & J. Williams	£605 10 0
Evan Jones	680 0 0	R. Jones	600 17 0
H. Martin	656 0 0	David Owen ..	547 9 0
W. G. Williams	619 2 1	Evan Humphreys, Llanfairfechan* ..	535 4 0
Jones & Williams	618 15 4		

PORT TALBOT (Wales). — For works at Church Bryn. Mr. F. B. Smith, architect, Port Talbot:—

R. Bridgeman	£587 5	Parker's Joinery & Cabinet Co.	£268 0
Lattey & Co.	385 0	Jos. Phillips, Altrincham*	265 0
Stephens, Bastow & Co.	369 0		
Parkstone Steam Joinery Co.	296 0		

REDHILL.—For erecting St. Joseph's Catholic Presbytery and Schools, Redhill, Surrey. Mr. William Bevan, architect, 12, Buckingham-street, Strand, W.C. Quantities by architect:—

J. P. Groome	£3,685 0	H. Heathfield ..	£2,175 0
Longley & Co....	2,779 0	A. B. Apted	2,143 0
Bagaley & Sons..	2,570 0	Nightingale & Son	2,109 0
Smith & Sons....	2,479 0	Cronk & Richardson.....	2,073 0
G. Minter	2,462 0	Roberts & Co. ..	2,055 0
J. Appleby	2,420 0	Davis & Leaney*	1,998 0
W. Wallis	2,385 0	E. Worsell (withdrawn).....	1,776 0
R. B. Amos.....	2,379 7	G. Martin (withdrawn)	1,726 0
J. Nicks	2,350 0		
Buckland & Waters	2,340 0		
Harris & Son	2,330 0		
J. & M. Patrick..	2,269 0		
Battley, Son, & Holness	2,197 0		

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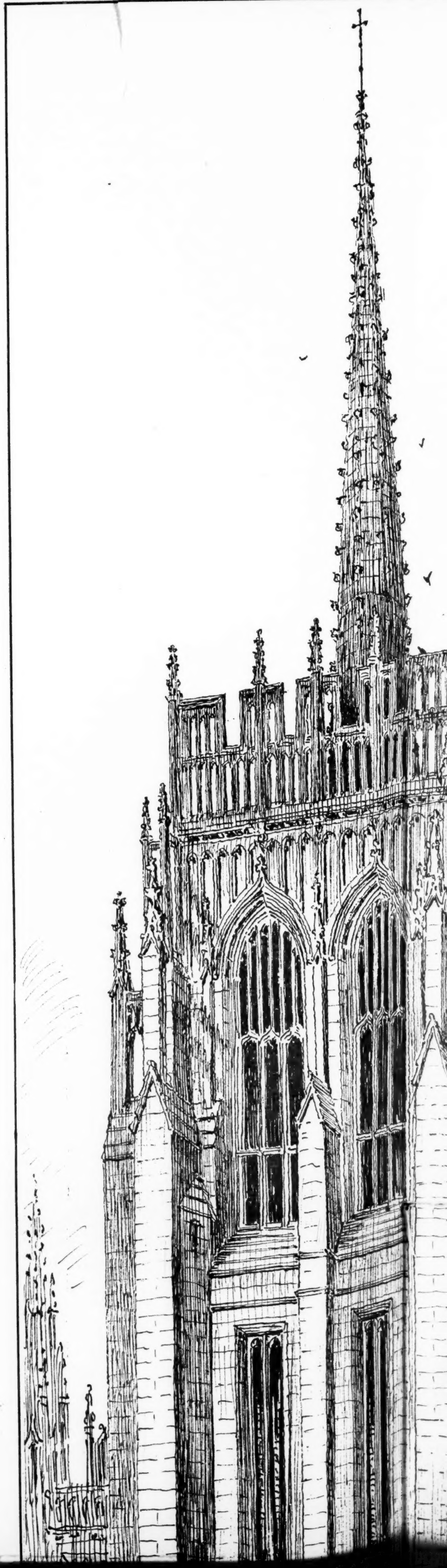

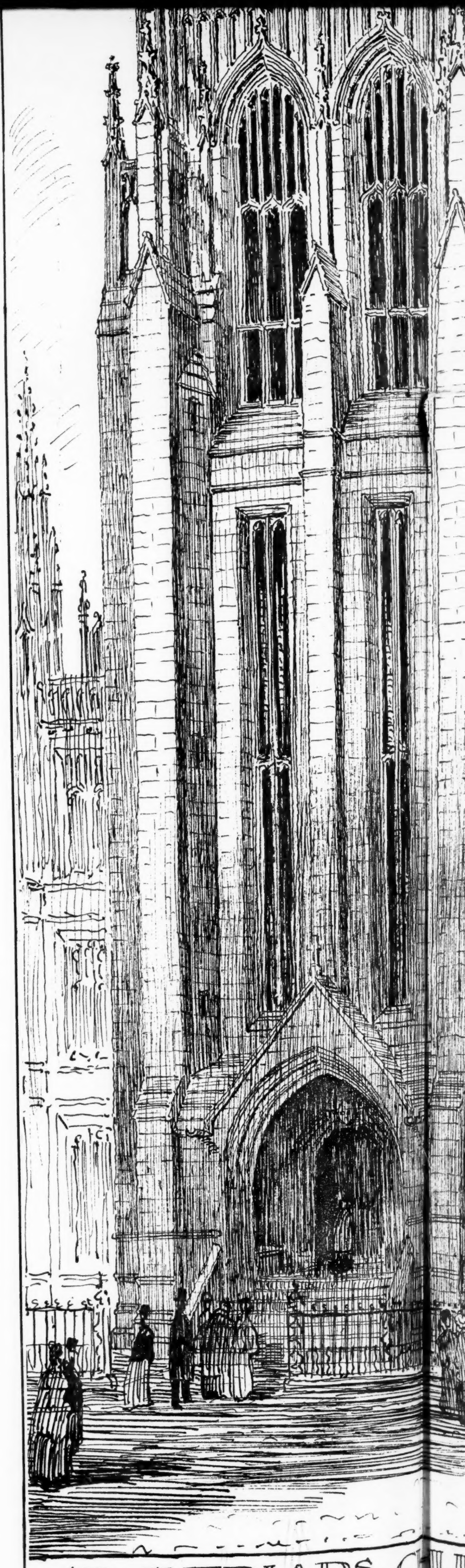

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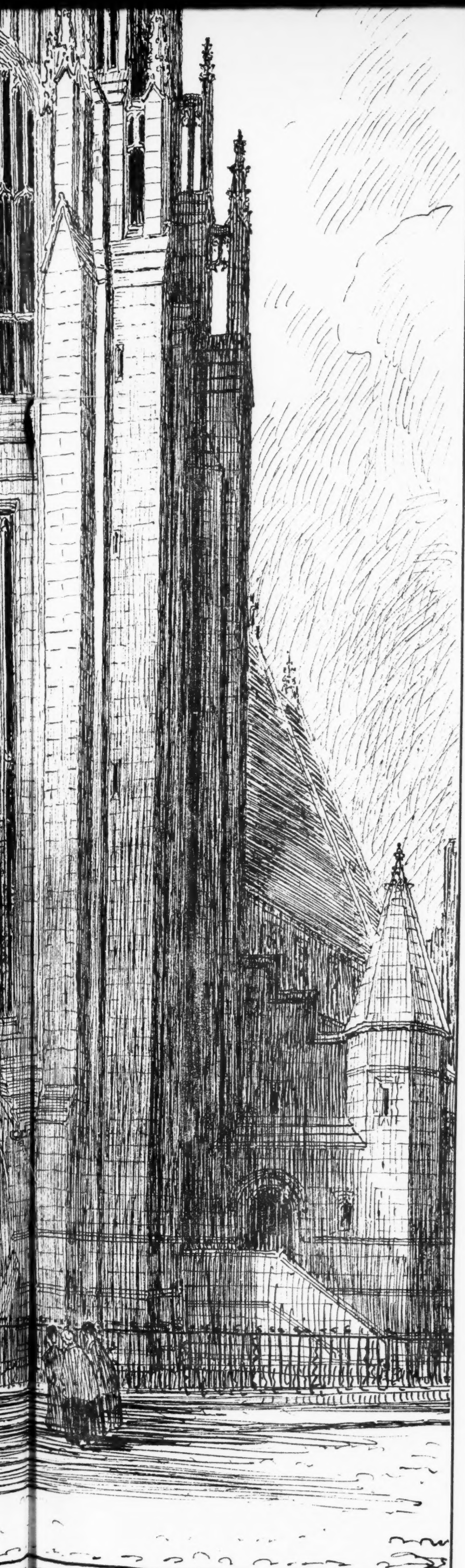

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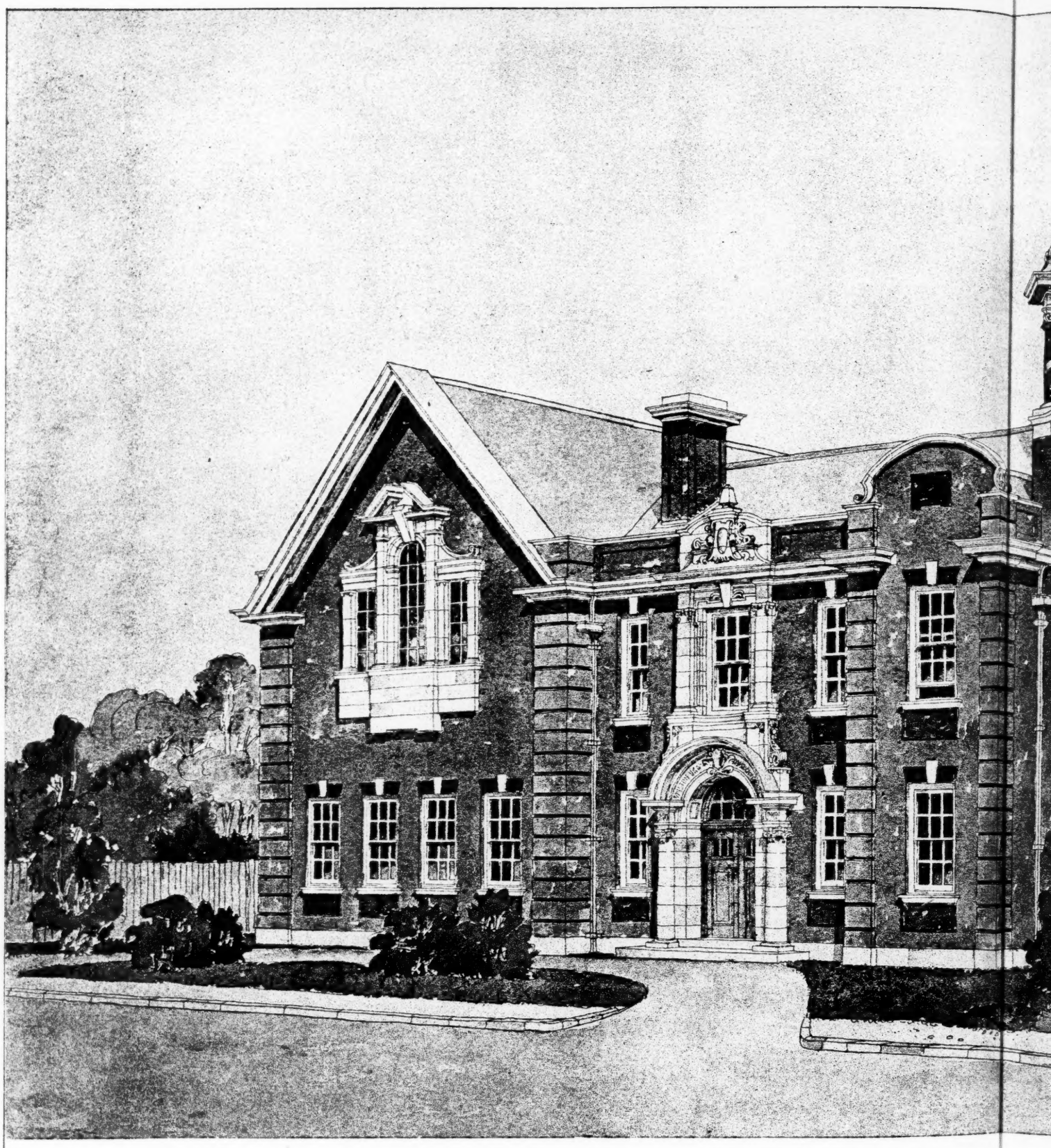

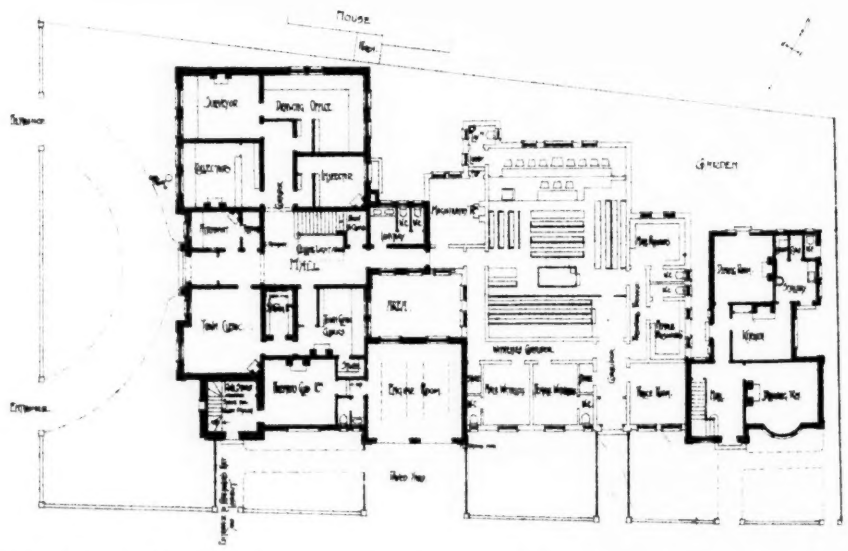

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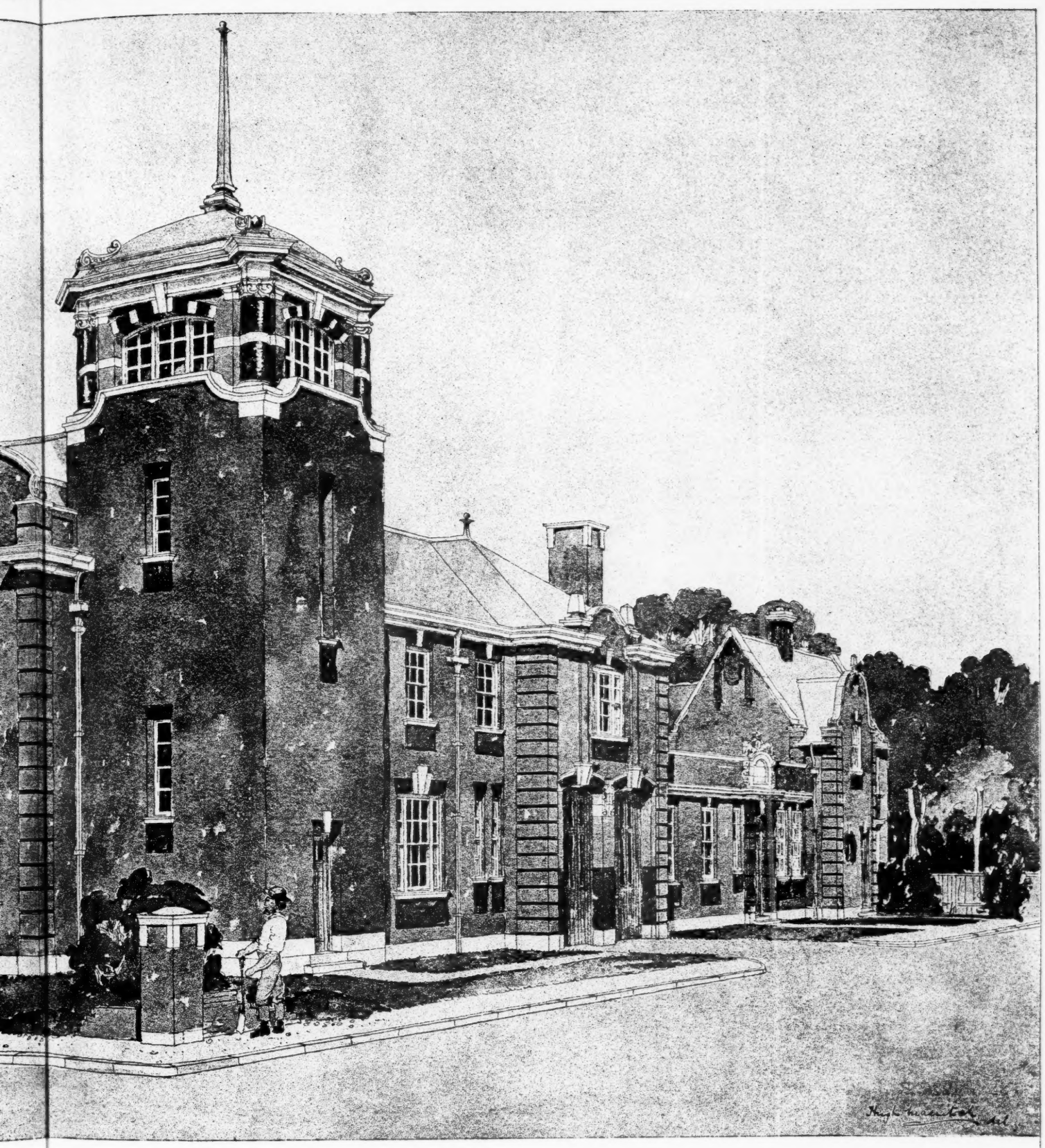

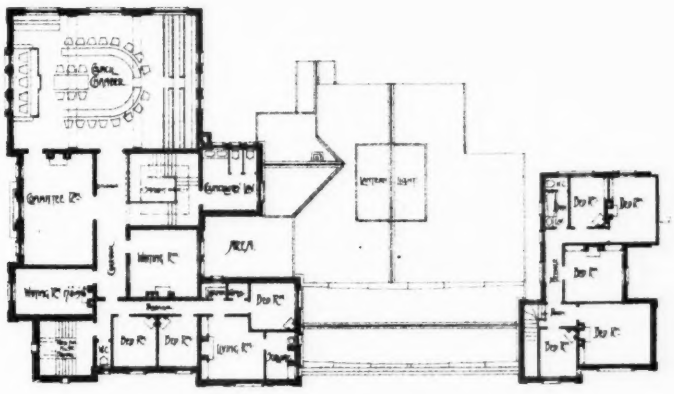

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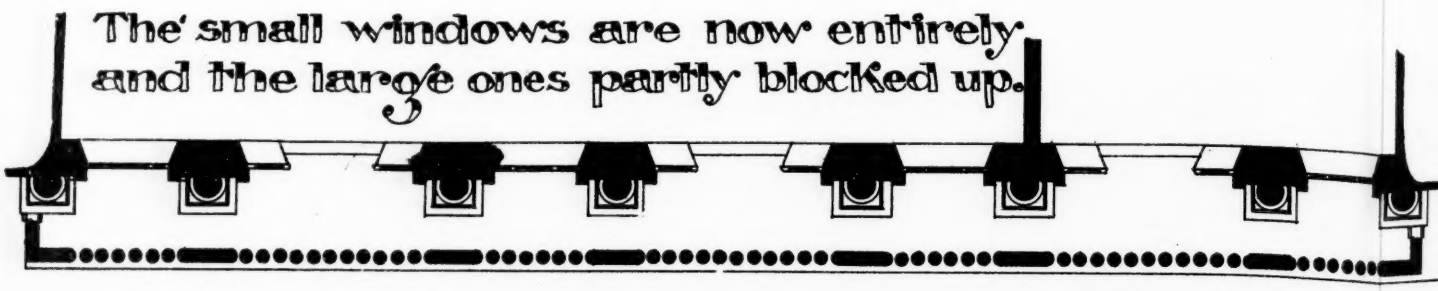

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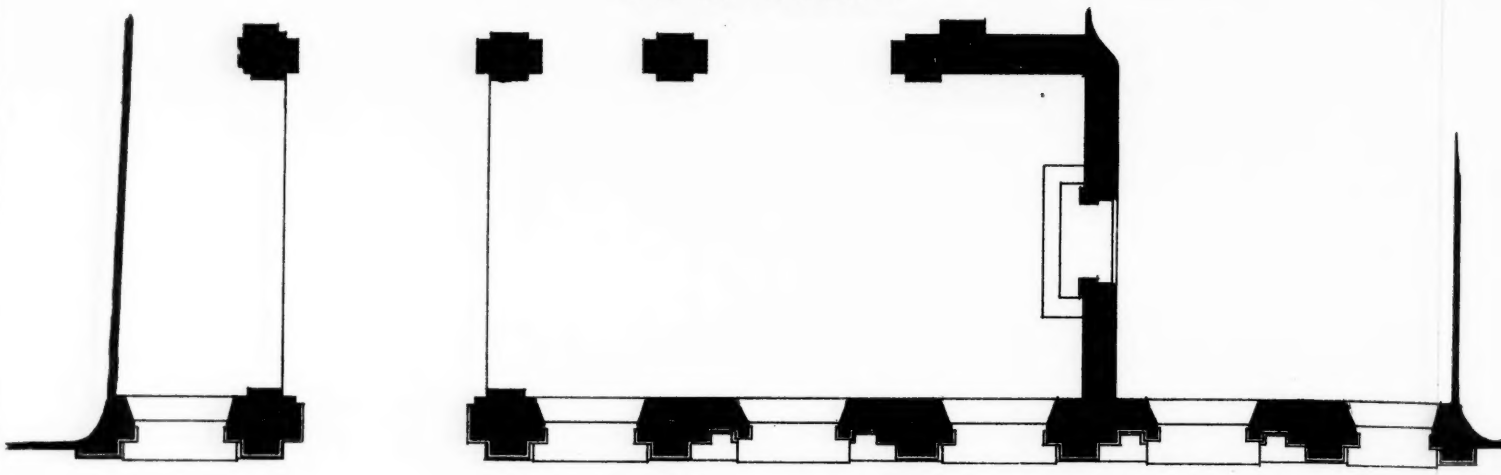

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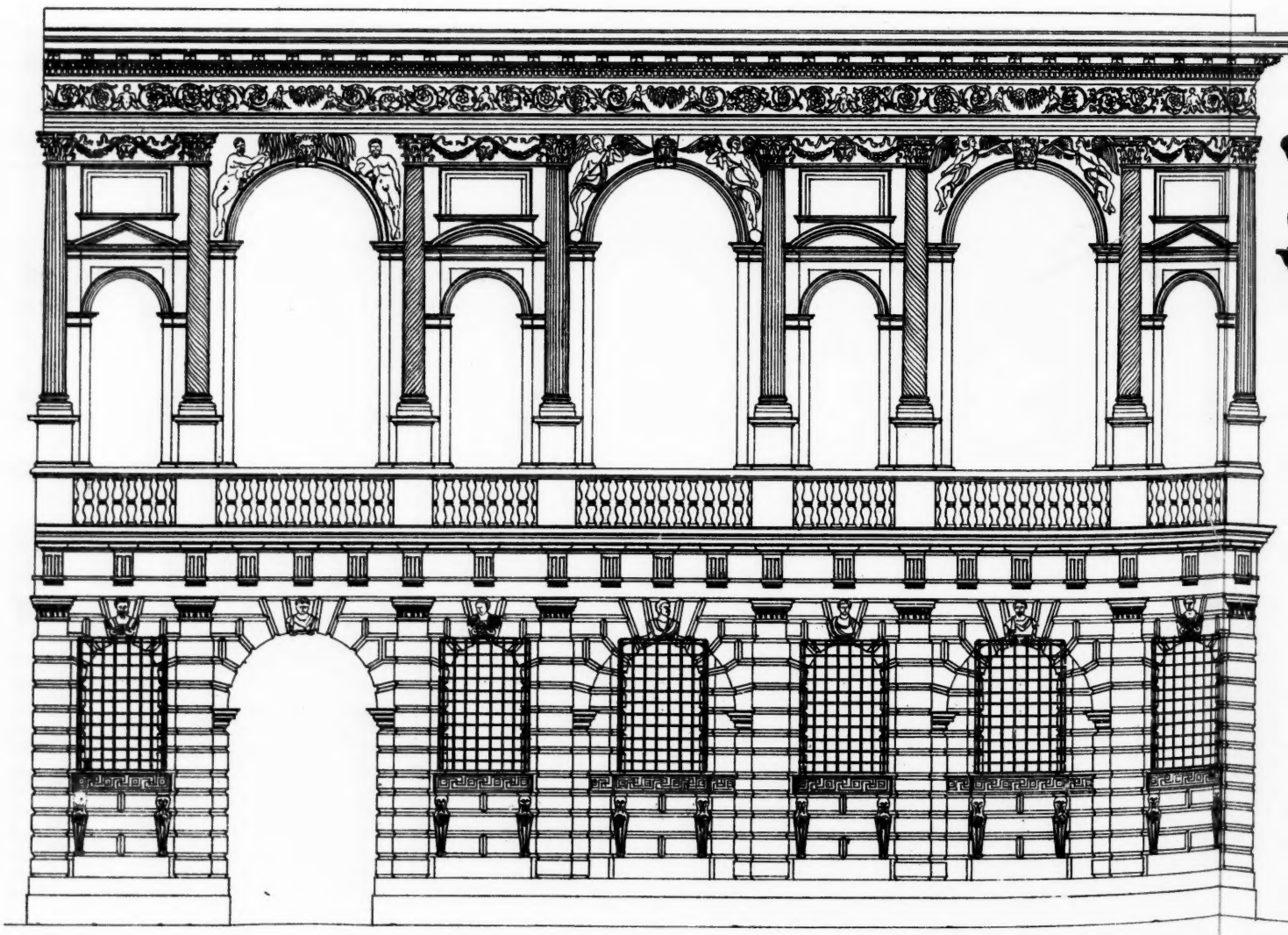

VERONA Palazzo Bevilacqua.

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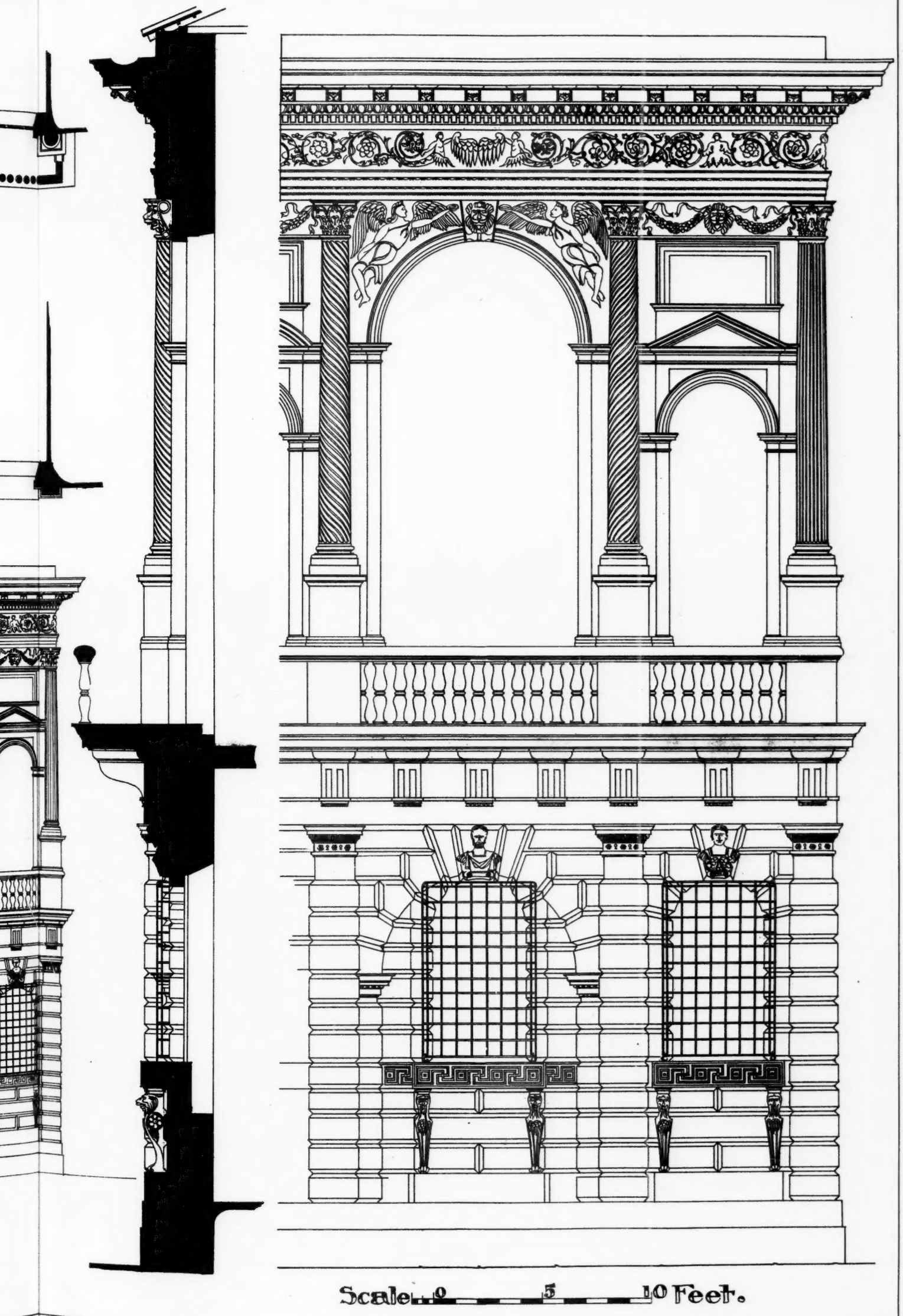

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